UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FINDING OF NO SIGNIFICANT IMPACT

FINLEY LP PAD WELLS
DOI-BLM-UT-G010-2022-0055-EA

November 2022

Location:
Location: Section 23, T7S R21E, S.L.B.&M.
Uintah, County, Utah

Applicant/Address:
Finley Resources, Inc.
1308 Lake Street
Fort Worth, TX 76113

Vernal Field Office
170 South 500 East
Vernal, Utah 84078
435-781-4400
435-781-4499 (Fax)

BLM

FINLEY LP PAD WELLS

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F.1 INTRODUCTION

The Bureau of Land Management (BLM) completed an environmental review DOI-BLM-UT-G010-2022-0055-EA prepared for the Proposed Action (hereafter selected alternative) of Finley LP Pad Wells in Uintah County, Utah. The selected alternative, as described in the attached Environmental Assessment, would be the drilling of 2 oil wells on a new pad with associated infrastructure (i.e. access road and pipeline). The project area is in the Johnson Bottoms area..

F.2 FINDING OF NO SIGNIFICANT IMPACT

Based on my review of the attached Environmental Assessment and supporting documents, I have determined that the selected alternative will not be a major federal action and will not significantly affect the quality of the human environment. No environmental effects meet the definition of significance as defined in 40 CFR 1501.3(b) and will not exceed those effects described in the Final Environmental Impact Statement (EIS) for the 2008 Vernal Field Office Resource Management Plan, as amended. Therefore, an EIS is not needed.

F.2.1 MITIGATION AND AUTHORITIES

Air Quality

- All internal combustion equipment will be kept in good working order.
- Water or other approved dust suppressants will be used at construction sites and along roads, as determined appropriate by the Authorized Officer.
- Open burning of garbage or refuse will not occur at well sites or other facilities.
- Drill rigs will be equipped with Tier II or better diesel engines
- During completion, no venting will occur, and flaring will be limited as much as possible. Production equipment and gathering lines will be installed as soon as possible.
- Hydrocarbon gases will be flared at high temperatures to reduce emissions of incomplete combustion using multi-chamber combustors.
- Telemetry will be installed to remotely monitor and control production.
- All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horsepower must not emit more than 2 grams of NOx per horsepower-

hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower-hour.

- All new and replacement internal combustion gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 grams of NOx per horsepower-hour.
- Green completions will be used for all well completion activities where technically feasible.
- The operator will obtain permits for stationary sources that have been excluded from the general conformity emissions (storage tanks) and will not increase the annual development above the maximum evaluated for general conformity purposes (16 wells per year).

Migratory Birds

- To protect migratory birds during the breeding season, USFWS Utah Field Office recommends a minimum timing restriction of April 1 – July 15 for ground disturbing activities including habitat removal by clearing or cutting of vegetation (USFWS 2020). If construction involving ground disturbing activities using heavy equipment is scheduled to be initiated during the migratory bird nesting season (April 1 – July 15), a site-specific survey for migratory bird nests must be performed 7-10 days prior to any construction to document the presence or absence of any nesting activity. Any documented active nests sites would be avoided by a 100-foot buffer. The survey shall be performed by a BLM, or another biologist approved by the Authorized Officer.

Raptors

- If any raptor nests are found in the project area during implementation of the proposed action, the Authorized Officer shall be notified. Mitigation measures may be required, and seasonal and spatial buffers would apply to the project during construction, specific to the raptor species identified.

Burrowing Owl

- If construction or drilling activities are scheduled during the burrowing owl nesting season (March 1- August 31), a site-specific survey for burrowing owl nests must be performed 7-10 days before any construction start date to document the presence or absence of any nesting activity. Any documented active nests sites would be avoided by a 0.25-mile buffer. The survey shall be performed by a BLM, or another biologist approved by the Authorized Officer.

Plants: Native Vegetation & BLM Sensitive

- Only water (no chemical, reclaimed production water, or il field brine) will be used for dust suppression during construction
- Traffic will stay on designated routes and other cleared/approved areas

Paleontology

- If any fossils are uncovered during construction, activities shall be halted within 50 feet of the discovery and the BLM Authorized Officer notified for any actions to be taken.

Signature and Date
Authorized Officer

UNITED STATES
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DECISION RECORD

FINLEY LP PAD WELLS

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FINLEY LP PAD WELLS

DOI-BLM-UT-G010-2022-0055-EA

It is my decision to authorize proposed action: Finley Resources, Inc. drilling 2 wells on a new pad with associated infrastructure (i.e. access road and pipeline), as described in the Environmental Assessment DOI-BLM-UT-G010-2022-055-EA.

Well Identification	Legal Location	Lease Number
LP Federal 23-09-7-21E	Sec 23 T7S R21E	UTU089363
LP Federal 24-12-7-21E	Sec 23 T7S R21E	UTU089238

D.1 CONDITIONS OF APPROVAL/STIPULATIONS

Air Quality

- All internal combustion equipment will be kept in good working order.
- Water or other approved dust suppressants will be used at construction sites and along roads, as determined appropriate by the Authorized Officer.
- Open burning of garbage or refuse will not occur at well sites or other facilities.
- Drill rigs will be equipped with Tier II or better diesel engines
- During completion, no venting will occur, and flaring will be limited as much as possible. Production equipment and gathering lines will be installed as soon as possible.
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- Telemetry will be installed to remotely monitor and control production.
- All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horsepower must not emit more than 2 grams of NOx per horsepower-hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower-hour.
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- Green completions will be used for all well completion activities where technically feasible.
- The operator will obtain permits for stationary sources that have been excluded from the general conformity emissions (storage tanks) and will not increase the annual development above the maximum evaluated for general conformity purposes (16 wells per year).

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Raptors

- If any raptor nests are found in the project area during implementation of the proposed action, the Authorized Officer shall be notified. Mitigation measures may be required, and seasonal and spatial buffers would apply to the project during construction, specific to the raptor species identified.

Burrowing Owl

- If construction or drilling activities are scheduled during the burrowing owl nesting season (March 1- August 31), a site-specific survey for burrowing owl nests must be performed 7-10 days before any construction start date to document the presence or absence of any nesting activity. Any documented active nests sites would be avoided by a 0.25-mile buffer. The survey shall be performed by a BLM, or another biologist approved by the Authorized Officer.

Plants: Native Vegetation & BLM Sensitive

- Only water (no chemical, reclaimed production water, or il field brine) will be used for dust suppression during construction
- Traffic will stay on designated routes and other cleared/approved areas

Paleontology

- If any fossils are uncovered during construction, activities shall be halted within 50 feet of the discovery and the BLM Authorized Officer notified for any actions to be taken.

D.2 RATIONALE

The selected alternative will meet the BLM's purpose to allow the lessee to develop the subject mineral lease indicated above. The need for the action is established by BLM Onshore Oil and Gas Operations (43 CFR 3160) which require BLM to provide a decision for APDs on Federal lands under its jurisdiction.

D.3 PUBLIC INVOLVMENT

This project was posted online to the BLM public-access National NEPA Register on May 3, 2022.

D.4 PROTEST AND APPEAL

Appeals: This decision is effective upon the date it is signed by the authorized officer. The decision is subject to appeal. Under BLM regulation, this decision is subject to administrative review in accordance with 43 CFR 3165. Any request for administrative review of this decision must include information required under 43 CFR 3165.3(b) (State Director Review), including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, Utah State Office, P.O. Box 45155, Salt Lake City, Utah, 84145-0155, within 20 business days of the date this Decision is received or considered to have been received.

If you wish to file a petition for stay, the petition for stay should accompany your notice of appeal and shall show sufficient justification based on the following standards:

1 The relative harm to the parties if the stay is granted or denied;
2 The likelihood of the appellant's success on the merits;
3 The likelihood of irreparable harm to the appellant or resources if the stay is not granted; and,
4 Whether the public interest favors granting the stay.

D.5 APPROVAL

Signature and Date
Authorized Officer

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ENVIRONMENTAL ASSESSMENT

FINLEYS LP PAD WELLS

DOI-BLM-UT-G010-2022-0055-EA

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FINLEYS LP PAD WELLS

DOI-BLM-UT-G010-2022-0055-EA

1.0 INTRODUCTION

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of 2 new oil wells with associated road, pipeline, well pad as proposed by Finley Resources, Inc.

1.1 BACKGROUND

This Environmental Assessment has been prepared to disclose and analyze the environmental consequences of the proposed action: the Finley LP Pad Wells as proposed by Finley Resources Inc.. The applicant intends to develop leases in the UTU089363 and UTU089238 by constructing a well pad and drilling 2 wells. Finley Resources has submitted 2 Applications for Permit to Drill (APDs) in March of 2022 associated with Leases UTU089363 and UTU089238.

1.2 PURPOSE AND NEED

The BLM purpose for action is to allow the applicant to develop the valid, existing mineral lease while considering or minimizing impacts to the environment. The BLM need for action is established by its responsibility under Onshore Orders (43 CFR 3160) to review and provide a decision for Applications for Permit to Drill (APDs) submitted on lands under its jurisdiction.

1.3 DECISION TO BE MADE

The BLM decision to be made is whether to approve or deny the APDs.

1.4 CONFORMANCE WITH BLM LAND USE PLAN(S)

The proposed action and alternatives described below would be in conformance with the Vernal Resource Management Plan, approved October 2008.

1) They would conform to decision(s) concerning minerals and energy resources existing terms of leases, on page 21, which states: “The Approved RMP does not affect terms of existing leases, commercial recreation permits, or other permits issued by the RMP”.

2) Although the proposed action and alternative(s) are not specifically mentioned in the plan, they would be consistent with its objectives, goals, and decisions as they relate to Minerals and

Energy Resources as stated on pages 29 through 32 of the RMP. It has been determined that the proposed action and alternative(s) would not conflict with other decisions throughout the plan.

1.3 RELATIONSHIP TO STATUTES, REGULATIONS, OR OTHER PLANS

This proposed action and alternative(s) would conform with the Uintah County General Plan (Uintah County, 2011) and comply with all other Federal, State, and Local Law

1.4 IDENTIFICATION OF ISSUES

This section summarizes the results of the issue identification process. Issues selected for detailed analysis were identified by a BLM Interdisciplinary Team as documented in the Interdisciplinary Team Checklist (Appendix A). This Checklist also provides the rationale for issues that were considered but not analyzed in detail by this Environmental Assessment.

1.4.1 AMBIENT AIR QUALITY

How would the alternatives impact air quality?

1.4.2 GREENHOUSE GASES AND CLIMATE CHANGE

How would the alternatives impact greenhouse gases and climate change?

1.4.3 WILDLIFE: MIGRATORY BIRDS (INCLUDING RAPTORS)

How would the alternatives impact migratory bird and burrowing owl populations and habitat?

1.4.4 WILDLIFE: NON-USFWS DESIGNATED

How would the proposed action impact pronghorn and white-tailed prairie dog populations and habitat?

1.4.5 PLANTS: NATIVE VEGETATION

How would the alternatives impact native plant communities?

1.4.6 PLANTS: BLM SENSITIVE

How would the alternatives impact horseshoe milkvetch (*Astragalus equisolensis*)?

2.0 DESCRIPTION OF ALTERNATIVES

This chapter describes the alternatives considered by the BLM during preparation of this EA.

2.1 ALTERNATIVE A – NO ACTION

Under the no action alternative, the APDs would be denied, and the proposed wells and associated facilities and infrastructure would not be constructed.

2.2 ALTERNATIVE B – PROPOSED ACTION

Under the Proposed Action Alternative, the applicant would construct a new well pad and directionally drill two new oil wells on BLM lands in Section 23, T. 7 S., R. 21 E., Uintah County, Utah (Figure 2-1). The project area is ~20 linear miles southwest of Vernal, Utah.

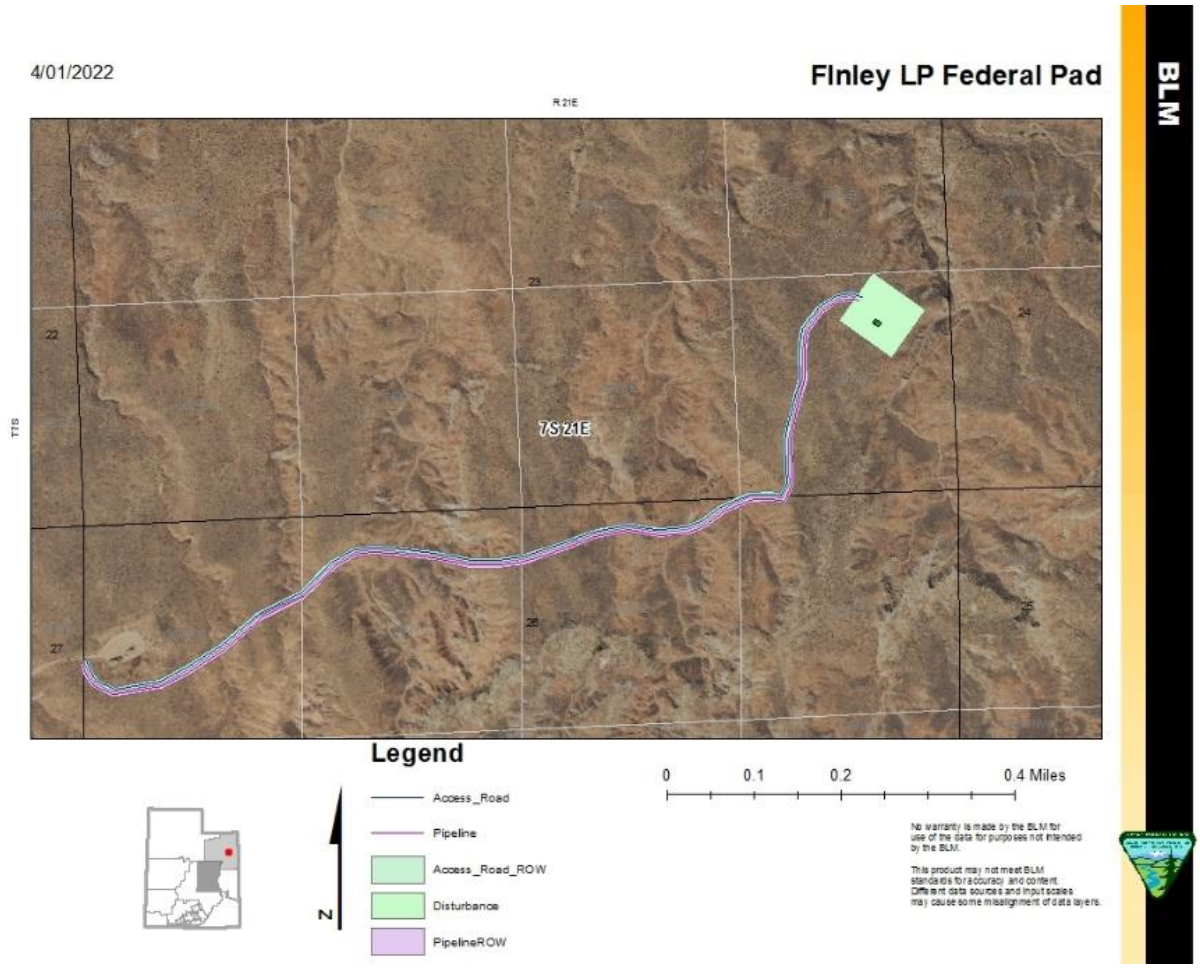

Figure 2-1 Proposed Project Area

The wells would be drilled using a closed-loop system. The project components would include an access road and pipeline, well pad, and associated infrastructure. The wells would be:

Well Identification	Legal Location	Lease Number
LP Federal 23-09-7-21E	Sec 23 T7S R21E	UTU089363
LP Federal 24-12-7-21E	Sec 23 T7S R21E	UTU089238

The following table (2-1) summarizes the maximum proposed site dimensions and disturbance.

Table 2-1. Summary Of Disturbance

Proposed Disturbance					
Area	**Initial Acres**	**Reclaimed**	**Total Long-Term**	**Feet**	
Well Pad	2.41	0.18	2.23	**Length**	**Width**
Access Road	4.25	1.70	2.55	6,164	30
Pipelines	4.26	4.26	0	6,178	30
Totals	**10.91**	**6.13**	**4.78**		

The total new surface disturbance from construction of the proposed action would be 10.91 acres. Surface and subsoil materials in the immediate project area would be used for construction. A cuttings pit would be included on the well pad and would be backfilled upon completion of the drilling. All production facilities would be located on the disturbed portion of the well pad ≥25 feet from the toe of the back slope or the top of the fill slope. A secondary containment dike with 100% of the capacity of the largest tank would be constructed completely around all production facilities which would contain fluids.

2.2.1 PIPELINE AND ROAD

6,164 feet of new access road would be constructed. The initial disturbance corridor during construction of the road would be 30 feet wide, but would be reclaimed to a 20-foot driving surface. The total new surface disturbance resulting from the access road would be 4.25 acres.

6,178 feet of buried pipeline would be installed with a 30-foot corridor adjacent to the new access road; this corridor would be immediately reclaimed after construction. A BLM right-of-way would be required. There would be 4.26 acres of new surface disturbance associated with this pipeline.

2.2.2 WATER USAGE

Approximately five acre-feet of fresh water per well for drilling and completion operations would be obtained from the following source shown in Table 2-2:

Table 2-2. Water Sources

Water Right No. and Application or Change No.	Applicant	Allocation	Priority Date	Point of Diversion	Source
43-720, change A9880	Ouray Park Irrigation Company	1300-acre feet	10/14/1977	Sec. 25, T1S, R1E, USB&M	Deep Creek
43-11238 (A73912)	Four Star Ranch	25.2-acre feet	11/13/2007	Sec. 28, T7S, R20E, SLB&M	10” & 6” water wells
43-12699 (F80098)	Four Star Ranch	14.0-acre feet	08/05/2014	Sec. 28, T7S, R20E, SLB&M	6” water wells
43-12534 (F79549)	David McMullin	80-acre feet	11/28/2012	Sec. 28, T3W, R2E, USB&M	6” water well
43-12716 (A40183)	Alan Cooper	17.125-acre feet	9/23/2014	Sec. 27, T7S, R20E, SLB&M	4” & 8” water wells

Water would be hauled to the location over the existing roads. No new water wells would be drilled.

Produced Fluids Disposal

Any produced fluids from the well other than water would be decanted into steel test tank(s) until such time as the construction of the production facilities are complete. Any oil that may be accumulated would be transferred to a permanent production tank. Produced water may be used in further drilling and completion activities, evaporated in the pit, or hauled to Ute Tribal 26–1 state approved injection facility, (API #43-047-31822).

2.2.3 RECLAMATION

The full reclamation Plan is attached in appendix C.

Following BLM published Best Management Practices the interim reclamation would be completed within 90 days of completion of the well to reestablish vegetation, reduce dust and erosion and compliment the visual resources of the area. All equipment and debris would be removed from the area proposed for interim reclamation. The sequence for interim reclamation on the well pad would be as follows:

- In accordance with Onshore Oil and Gas Order No. 1, earthwork for interim and/or final reclamation would be completed within six months of well completion or abandonment.
- The well pad would be reduced to the minimum area necessary to safely conduct production operations. All other areas would be subject to interim reclamation which would include re-contouring, spreading of topsoil, seedbed preparation, and seeding.
- Recontouring would utilize excess cut material (spoil) and well pad fill material to achieve the original contour and grade, or a contour that blends with the surrounding topography. Slopes would be reduced to 3:1 or shallower. Storm water management, re-vegetation requirements, and visual resources would be considered in re-contouring the site. If necessary, and prior to spreading of topsoil (limited topsoil available), the rough grade would be ripped to a depth of 18 to 24 inches on 12 to 24 inch spacing; the last pass would be on the contour to promote water infiltration. No depressions would be left that would result in ponding.
- Salvaged topsoil would be spread and seeded.
- Final seedbed preparation would depend on the condition of the soil surface and would include scarifying a crusted soil surface or roller packing an excessively loose soil surface.
- Seeding would occur no more than 24 hours after final seedbed preparation. Seed would be certified weed free, minimum germination rate of 80%, and minimum purity of 90%.
- Seed may be drilled or broadcast. Seed drills would be operated on the contour. If seed is broadcast the seeding rate would be doubled and the seed covered using a drag. Seed would be planted to the appropriate depth for the species, generally ¼ to ½ inch deep.
- Trees cleared during site preparation and large rocks excavated during construction would be scattered across the interim reclamation area.
- Reclaimed areas receiving incidental disturbance during the life of the producing well would be re-contoured and reseeded as soon as practical. The operator would control noxious weeds along access road use authorizations and well site by spraying or mechanical removal, according to the Utah Noxious Weed Act and as set forth in the approved surface damage agreements.

Reclamation activities would require a minor amount of additional disturbance (estimated at 0.5 acres or less per well pad) to allow for equipment to access and push the topsoil and subsoil piles.

3.0 ENVIRONMENTAL TRENDS & PLANNED ACTIONS

This chapter presents the potentially affected, existing, environment (i.e., physical, biological, social, and economic values and resources) which is the baseline for comparison of the impacts/consequences between the alternatives. It also includes the impacts of the alternatives and the reasonably foreseeable environmental trends and planned actions in the analysis area.

3.1 GENERAL SETTING

The project area is in Section 23, T7S, R21E, USM of Uintah County, ~20 linear miles southwest of Vernal, Utah. Mineral extraction activities, transportation corridors, agricultural and ranching activities, livestock grazing, and erosion have historically affected the project area. The project boundary has been previously disturbed by livestock operations and oil and gas development. The soils in the area are dominated by gravelly, sandy loams. The vegetation in the area is typical of low-growing desert shrubland, including species such as shadscale, galleta grass, Indian rice grass, globemallow, cheatgrass, and Russian thistle.

3.2 AMBIENT AIR QUALITY - AFFECTED ENVIRONMENT

The Project Area is in the Uinta Basin, a semiarid, mid-continental climate regime typified by dry and windy conditions, limited precipitation, and wide seasonal temperature variations with abundant sunshine and rapid nighttime cooling. Areas in Duchesne and Uintah Counties below 6,250 feet elevation are designated as nonattainment of the ozone National Ambient Air Quality Standard (NAAQS) by the Environmental Protection Agency (EPA) under the Clean Air Act effective August 3, 2018 (EPA 2018c). Under the Clean Air Act, starting in August 2019, the BLM is required to make a general conformity determination for reasonably foreseeable emissions that result from the action (40 CFR 93.153.k). The EPA's criteria air pollutants website[1] lists the NAAQS standards (EPA 2018a). The EPA's Air Quality Design Values webpage[2] lists the Design Value Reports used for making NAAQS compliance determinations (EPA 2018d). Compliance with the NAAQS is typically demonstrated by monitoring for ground-level atmospheric air pollutant concentrations.

Since ozone is formed by chemical reactions between Nitrogen Oxides (NOx) and Volatile Organic Compounds (VOC), emissions of these pollutants are of particular concern in the Uinta Basin. The county-level design values can be found in the 2021 Air Monitoring Report and are incorporated by reference. Although the current design value for Uintah County is above the ozone NAAQS (2018-2020 design value of 0.076 ppm), the trend has been decreasing and the area is moving towards attainment (BLM 2021; EPA 2021a). Since the 2011-2013 design value,

[1] https://www.epa.gov/criteria-air-pollutants/naaqs-table
[2] https://www.epa.gov/air-trends/air-quality-design-values

the Uintah County ozone design value has decreased 0.03 ppm. In 2020, the most recent year for which data has been quality-assured, all monitoring sites in the Uinta Basin non-attainment area were below the ozone NAAQS (4th highest daily maximum 8-hr average) (EPA 2021a).

The Utah Division of Air Quality (UDAQ) compiles statewide emission inventories to assess the level of pollutants released into the air from various sources. The UDAQ's website lists the 2017 Emissions Inventory by Source for each county[3] (UDAQ 2017) including oil and gas sources. Hazardous air pollutants (HAPs), also known as toxic air pollutants, are known or suspected to cause cancer or other serious health effects, or adverse environmental effects. HAPs emitted by the oil and gas industry include benzene, toluene, ethyl benzene, mixed xylenes, formaldehyde, normal-hexane, acetaldehyde, and methanol. The UDAQ's website also lists the Statewide HAP Point Source Summary by County (UDAQ 2019).

The Prevention of Significant Deterioration (PSD) is a Clean Air Act (CAA) permitting program for new or modified major sources of air pollution located in attainment areas. It is designed to prevent NAAQS violations, preserve and protect air quality in sensitive areas, and protect public health and welfare[4] (EPA 2018b). Under PSD regulations, the EPA classifies airsheds as Class I, Class II, or Class III. Air quality related values (AQRVs) include visibility, atmospheric deposition, and changes in acid neutralizing capacity (ANC). The Uinta Basin Air Resource Management Strategy modeled impacts to AQRVs for three types of assessment areas: the Uinta Basin study area (Class II), Class I and sensitive Class II areas, and sensitive lakes. The locations of the Class I and sensitive Class II areas that are within 300-km of the Uinta Basin study area, with respect to the modeling domains, are shown in Figure 2-2 of the 2014 Utah Air Resource Management Strategy Modeling Project Impact Assessment Report (AECOM 2014). The closest sensitive areas to the lease sale project area are the High Uintas Wilderness, the Uintah and Ouray Reservation, Dinosaur National Monument, and Flaming Gorge Recreation Area (all Class II). The closest Class I areas are Arches National Park to the south, Flat Tops Wilderness to the east, and Bridger Wilderness to the north. Each of these classes have different applicable thresholds for evaluating air quality and AQRV impacts which, in turn, require different air quality assessment methods.

3.2.1 ALTERNATIVE A (NO ACTION) ENVIRONMENTAL CONSEQUENCES

Under the No Action Alternative, no new impacts to ambient air quality would occur. However, Federal production levels are expected to remain static or even increase in the short-term and non-Federal oil and gas supply would likely increase if the well were not developed.

3.2.2 ALTERNATIVE B (PROPOSED ACTION) ENVIRONMENTAL CONSEQUENCES

This Proposed Action would be considered a minor air pollution source under the Clean Air Act as present control technology on some emissions sources (e.g. drill rigs) is not required by

[3] https://deq.utah.gov/air-quality/2017-statewide-emissions-inventories
[4] https://www.epa.gov/nsr/prevention-significant-deterioration-basic-information

regulatory agencies. The Proposed Action would result in different emission sources associated with two project phases: well development and well production. Annual estimated emissions from the Proposed Action, summarized in Table 3-1, are estimated from the BLM Single Oil and Gas Well Emissions Tool. The wells would be drilled from a new well pad, including a new access road and pipeline to the project area. Emissions related to pad, road, and pipeline construction were only included for one well and are incorporated in the single well construction/development phase in Table 3-1. Once the pad is constructed for one well, these features would be existing, and no surface disturbance would take place for the other well constructed on the pad.

Table 3-1. NAAQS Proposed Action Emissions (tons/year)

	Total Emissions (Tons per Year)					
Pollutant:	**Single Well Construction/ Development Phase:**	**Single Well Operation Phase:**	**Single Well Total:**	**2 Well Construction/ Development Phase:**	**2 Well Operation Phase:**	**2 Well Project Total:**
CO	2.42	1.82	4.23	4.83	3.63	8.47
NO_x	10.00	1.30	11.29	20.00	2.59	22.59
PM_{10}	6.94	3.64	10.58	13.89	7.27	21.16
$PM_{2.5}$	1.04	0.44	1.48	2.08	0.89	2.97
SO_x	3.56E-04	7.08E-04	1.06E-03	7.12E-04	1.42E-03	2.13E-03
VOC	2.03	11.48	13.51	4.06	22.97	27.03
Total HAPs	0.18	1.27	1.45	0.36	2.53	2.90
Benzene	0.02	0.16	0.18	0.03	0.33	0.36
Ethylbenzene	2.00E-03	7.27E-03	9.27E-03	3.99E-03	1.45E-02	1.85E-02
n-Hexane	0.13	0.92	1.05	0.26	1.84	2.10
Toluene	0.02	0.06	0.08	0.04	0.13	0.16
Xylene	0.02	0.06	0.07	0.04	0.11	0.15

Well development includes NO_x, SO_2, and CO tailpipe emissions from vehicle traffic, construction equipment, drilling, and completion activities. Fugitive dust concentrations would occur from vehicle traffic on unpaved roads, construction equipment, and from wind erosion where soils are disturbed. Drill rig and fracturing engine operations would result mainly in NO_X and CO emissions, with lesser amounts of SO_2. These emissions would be short-term during the drilling and completion phases. During well production, continuous NO_x, CO, VOC, and HAP emissions would originate from well pad separators, condensate storage tank vents, and daily tailpipe and fugitive dust emissions from operations traffic. Road dust (PM_{10} and $PM_{2.5}$) would

be produced by vehicles servicing the wells. Under the proposed action, emissions of ozone precursors NO_x and VOC are shown in Table 3-1. The majority of HAP emissions would be from oil storage tanks and pneumatic devices, with smaller amounts from other production equipment. Emissions would be dispersed and/or diluted to the extent where any local ozone impacts from the Proposed Action would be indistinguishable from background conditions.

3.2.3.1 GENERAL CONFORMITY REVIEW

Section 176(c) of the Clean Air Act requires Federal agencies' actions to conform to applicable implementation plans for attaining and maintaining the NAAQS. The proposed development would occur within the Uinta Basin 8-hour Ozone Non-attainment Area. Non-attainment Areas (NAA) are designated by EPA and State regulatory agencies as having monitored criteria pollutant concentrations that exceed ambient air quality standards. Federal actions (i.e., APD permitting) occurring within NAAs are subject to the Clean Air Act's General Conformity Rule. For there to be conformity, a Federal action must not cause or contribute to any new violation of any standard in any area, increase the frequency or severity of any existing violation of any standard in any area, or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area. The Uinta Basin Ozone NAA is classified as marginal and is outside of an ozone transport region. Thus, the de minimis limit that applies for each ozone precursor (NO_x and VOC) is 100 tons per year (40 C.F.R. 193.53(b)(1)). If total emissions increases attributable to the Federal action are below de minimis levels, then the action is presumed to conform. Federal agencies approving actions with emissions below the de minimis limits for each NAA pollutant or precursor are not required to provide a formal conformity determination for the project, as the project is presumed to not interfere with the area's timely attainment of the National Ambient Air Quality Standards.

The maximum annual development and production VOC and NOx emissions for the project applicable to General Conformity Review (27.03 and 22.59 tons/year respectfully) would be below the General Conformity de minimis level (100 tons). Therefore, no further analysis of these emissions is required for General Conformity purposes, and the project would meet conformity.

Impacts are incorporated by reference to the Monument Butte Oil and Gas Development Project Final EIS Section 4.2 and Appendix F, which modeled nearfield and far-field impacts from oil and gas development to the Uinta Basin airshed (BLM 2016). The results of this model are considered overestimates for this project because the modeling included 5,750 oil and gas wells (more than anticipated for this project), and because the modeling did not include the reductions required by regulations promulgated since 2014. These regulations include, but are not limited to, the State of Utah General Administrative Order DAQE-ANI49250001-14, the tribal New Source Review programs, and the Waste Prevention Rule. The maximum modeled impact of the proposed action added to the pre-project background concentrations are shown in Tables 4.2.1.1.2-1 and 4.2.1.1.2-2. None of the maximum modeled impacts for Alternative A exceed the

NAAQS. The peak project-specific ozone impact (fourth-highest 8-hour daily maximum) for the absolute modeling results is 1.6 ppb at the Dinosaur air quality station. None of the maximum modeled impacts for HAPs (shown in Table 4.2.1.1.3-1) are greater than the HAP evaluation criteria. None of the maximum modeled impacts for HAPs (shown in Table 4.2.1.1.3-2) are greater than the EPA's acceptable range of cancer risk. None of the maximum modeled impacts at Class I and sensitive Class II areas (shown in Table 4.2.1.1.4-1) are greater than the PSD increments.

There was one day at the nearest Class I area where the maximum dV change was greater than 1.0, but the 98th percentile was less than 1.0. Regarding regional haze impacts at the Class I and Class III areas, the number of days with greater than 0.5 dV change, number of days with greater than 1.0 dV change, maximum dV change, and eighth highest dV change are shown in Table 4.2.1.1.4-2. None of the maximum modeled impacts for Alternative A exceed the 3 and 5 kilograms per hectare per year impact thresholds for acid deposition. The Deposition Analysis Threshold (DAT) of 0.005 kg/ha-yr was exceeded at the closest Class I and Class III areas for nitrogen deposition, but not for sulfur deposition. None of the maximum modeled impacts for Alternative A would exceed the Acid Neutralizing Capacity (ANC) evaluation thresholds at the 21 evaluated sensitive lakes.

Best Management Practices (BMPs)[5] have been developed which are mitigation measures applied to oil and natural gas drilling and production to help minimize impacts to air quality through reduction of emissions, surface disturbances, and dust from field production and operations. Additionally, the BLM encourages oil and natural gas companies to adopt other proven, cost-effective technologies and practices that improve operational efficiency and reduce emissions.

3.2.3.2 MITIGATION MEASURES

- All internal combustion equipment would be kept in good working order.
- Water or other approved dust suppressants would be used at construction sites and along roads, as determined appropriate by the Authorized Officer.
- Open burning of garbage or refuse would not occur at well sites or other facilities.
- Drill rigs would be equipped with Tier II or better diesel engines
- During completion, no venting would occur, and flaring would be limited as much as possible. Production equipment and gathering lines would be installed as soon as possible.

[5] https://deq.utah.gov/sbeap/best-management-practices-for-the-oil-and-gas-industry
https://www.epa.gov/natural-gas-star-program
https://archive.epa.gov/airquality/community/web/html/oil-gas.html
https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/operations-and-production/the-gold-book
http://www.oilandgasbmps.org/

- Hydrocarbon gases would be flared at high temperatures in order to reduce emissions of incomplete combustion through the use of multi-chamber combustors.
- Telemetry would be installed to remotely monitor and control production.
- All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horsepower must not emit more than 2 grams of NOx per horsepower-hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower-hour.
- All new and replacement internal combustion gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 grams of NOx per horsepower-hour.
- Green completions would be used for all well completion activities where technically feasible.
- The operator would obtain an air permit, if required by the regulatory agency, for equipment operating under this proposed action.

3.2.3 CUMULATIVE IMPACTS

The cumulative impact area for air quality is the Uinta Basin and all regional Class I areas and other environmentally sensitive areas near the Uinta Basin (e.g., national parks and monuments, wilderness areas, etc.). In 2017, the BLM initiated the ARMS regional modeling study to evaluate air quality and AQRV changes to the affected environment (BLM 2020). ARMS 2017 incorporates the latest oil and gas emission inventories, model improvements, and future oil and gas development scenarios. Projected emissions for High and Low development scenarios were calculated using the Utah Division of Air Quality's Uinta Basin Oil and Gas Emission Model (BLM 2020). Compared to the base year, the Low scenario shows a decline in oil and gas production, while the High scenario shows a production increase. Source apportionment is used in the modeling study to evaluate changes to air quality and AQRVs from all sources, including biogenic sources, BLM Uinta Basin Oil and Gas sources, other oil and gas sources, and non-oil and gas anthropogenic sources. Future year modeling results are compared with the NAAQS for criteria pollutants (O3, PM2.5, PM10, NO2 and SO2) throughout the State of Utah. The contributions of BLM oil and gas development emissions to air quality and AQRVs at Utah Class I and Class II sites and at sensitive lakes are also compared against PSD increment concentrations, visibility and deposition thresholds of concern. Analysis of ARMS 2017 emissions projections indicate it is very likely that the High scenario overestimates oil and gas VOC and NOx emissions for the future year estimates.

The ARMS 2017 model shows potential exceedances of the O3 NAAQS in the Uintah Basin. Evaluation of the Annual and 24-hour PM2.5, and 24-hour PM10 NAAQS show exceedances only occurring due to exceptional events such as wildfires. No exceedances of the SO2 or NO2 NAAQS are projected. The PSD analysis showed exceedance of the Class II NO2 threshold (13.3 ppb) at the Uintah and Ouray Indian Reservation, primarily from non-BLM oil and gas development. BLM oil and gas development in the Uinta Basin is not projected to result in any visibility degradation, change in deciview (dV) exceedances, occurring at Class I National Parks

in Utah. The simulated total annual nitrogen and sulfur depositions for both base and future years were below the corresponding critical loads at all assessed Class I and Class II areas.

The ARMS 2017 impact analysis results indicate that air impacts of emissions from projected oil and gas development activities under BLM jurisdiction in Uintah and Duchesne Counties (BLM-OGD) for both High and Low Development Scenarios were strongly confined to the Uinta Basin and did not contribute to the long-range transport of impacts outside the Basin. This conclusion holds true for all pollutants. Emissions from BLM oil and gas development were not responsible for any violations of the NAAQS standard, PSD, visibility and deposition thresholds of concern predicted by the 2025 High and Low Development Scenarios modeling results in the areas outside of Uinta Basin. The contributions of BLM oil and gas development emissions to all AQ and AQRVs were minor in comparison to other emission sectors. The BLM oil and gas development emissions contributed 8.88% and 4.22% respectively to the total 2025 High and Low simulated daily 8-hour maximum ozone concentrations in the Uinta Basin and contributed less than 0.01% to simulated daily 8-hour maximum ozone outside the Uinta Basin. The maximum contribution of BLM oil and gas development emissions to total PM2.5 concentrations are less than 1% and were four times less than contributions from other oil and gas development activities that are not on BLM lands.

3.3 GREENHOUSE GASES AND CLIMATE CHANGE – AFFECTED ENVIRONMENT

Climate is the composite of generally prevailing weather conditions of a particular region throughout the year, averaged over a series of years such as temperature and precipitation. The 2021 BLM Utah Air Monitoring Report (BLM 2021)[6] discusses the current climate conditions in Utah and is incorporated by reference. The report presents the three-decade average and trends of temperature and precipitation for each of the seven climate divisions and BLM Field Offices (FOs) in Utah.

Average annual temperature and precipitation information for the climate divisions covering Daggett, Duchesne, and Uintah counties is presented in Table 3-2, along with trends from the most recent climate normal period (1991-2020). Average annual temperatures range from 40-52°F, with the Northern Mountains division being the coolest and the Southeast division the warmest. The long term (1895-2020) climate trends show increasing temperatures and almost no change in precipitation amounts. Additional details on climate in these areas and the rest of Utah are provided in the 2021 BLM Utah Air Monitoring Report (BLM 2021).

Table 3-2. Climate Trends

[6] https://go.usa.gov/x6FSg

	1895-2020 Mean		1895-2020 Trend (change/decade)		1991-2020 Mean	
Climate Division	**Temp (ºF)**	**Precip (in.)**	**Temp (ºF)**	**Precip (in.)**	**Temp (ºF)**	**Precip (in.)**
5, Northern Mountains	40.2	23.39	+ 0.2	+0.01	41.6	23.40
6, Uinta Basin	45.2	10.72	+ 0.3	+0.01	47.0	10.76
7, Southeast	51.6	9.76	+ 0.3	-0.01	53.2	9.69

The Fourth National Climate Assessment (NCA4) provides a detailed assessment of climate change impacts that have occurred in various regions of the United States. The Southwest region (Arizona, California, Colorado, New Mexico, Nevada, and Utah) encompasses a broad range of climates, including the hottest and driest climates in the United States. The average annual temperature of the Southwest increased 1.6°F (0.9ºC) between 1901 and 2016. Moreover, the region recorded more warm nights and fewer cold nights between 1990 and 2016, including an increase of 4.1°F (2.3°C) for the coldest day of the year. Each NCA has consistently identified drought, water shortages, and loss of ecosystem integrity as major climate change challenges that the Southwest confronts. Since the last assessment, published field research has provided even stronger detection of hydrological drought, tree death, wildfire increases, sea level rise and warming, oxygen loss, and acidification of the ocean that have been statistically different from natural variation, with much attribution pointing to human-caused climate change (USGCRP 2018).

Climate change is linked to the rising levels of GHGs in the atmosphere. Earth's atmosphere has a natural greenhouse effect wherein naturally occurring gases such as water vapor, carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), and fluorinated gases absorb and retain heat (EPA 2021b). Several sources contribute to climate change, including emissions of GHGs from fossil fuel development (especially CO2 and methane), large wildfires, use of combustion engines, changes to the natural carbon cycle, and changes to radiative forces and reflectivity (albedo). Atmospheric concentrations of GHGs, including the global mean surface concentration and rate of change for CO2, CH4, and N2O are provided in the BLM Utah Air Monitoring Report (BLM 2021), and Table 3-3.

Table 3-3. Global Atmospheric Concentration and Rate of Change of Greenhouse Gases

	CO_2	**CH_4**	**N_2O**
Pre-Industrial Concentration	278 ppm	0.722 ppm	0.270 ppm
2019 Atmospheric Concentration	410.5 ppm	1.877 ppm	0.332 ppm

	CO_2	CH_4	N_2O
2019 Increase Relative to Pre-Industrial	148%	260%	123%
Rate of Change over last 10 years	2.37 ppm/yr	0.007 ppm/yr	0.096 ppm/yr

Each GHG has a global warming potential (GWP) that accounts for the intensity of its heat-trapping effect and longevity in the atmosphere. GWP values allow for comparison of the impacts of emissions and reductions of different gases. Specifically, GWP values are a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of CO2. According to the Intergovernmental Panel on Climate Change (IPCC), GWPs typically have an uncertainty of ±35 percent. GWPs have been developed for several GHGs over different time horizons including 20-year, 100 year, and 500 year. The choice of emission metric and time horizon depends on type of application and policy context. No single metric is optimal for all policy goals. The 100-year GWP (GWP100) was adopted by the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. The GWP100 is now used widely as the default metric. In addition, the EPA uses the 100-year time horizon in its *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2017* (EPA 2019), GHG Reporting Rule requirements under 40 CFR Part 98 Subpart A, and uses the GWPs and time horizon consistent with the IPCC Fifth Assessment Report (AR5), Climate Change Synthesis Report, 2014 (IPCC 2014) in its science communications. The BLM uses GWPs that reflect the current science and the 100-year time horizon to allow for direct comparison to state and national emissions.

Because GHGs circulate freely throughout Earth's atmosphere, climate change is a cumulative global issue. Present annual GHG emissions on a state, national, and global scale are incorporated by reference from the BLM Utah Air Monitoring Report (BLM 2021), Table 3-4.

Table 3-4. GHG Emission in Million Metric Tons (CO2e)

Utah	US Energy Sector	United States	Global
60.3	5,392.3	6,558.3	59,100.0

An estimate of existing GHG emissions scaled to Daggett, Duchesne, and Uintah Counties is provided in the BLM Utah Air Monitoring Report (BLM 2021). The upstream oil and gas sector is the largest sector for GHG emissions in Duchesne County (1,524,120 metric tons (MT) CO2e). Industrial sources are the largest sector for GHG emissions in Daggett (49,311 MT CO2e) and Uintah (3,884,089 MT CO2e) counties. These sources include the Bonanza power plant, several compressor stations, and gas plants. By 2030, operators of the Bonanza power plant will either retire or make major emissions modifications to the facility. There is an

agreement with conservation organizations to limit remaining lifetime coal consumption to 20 million tons, which will limit the foreseeable amount of GHG emissions from the facility.

The Annual Greenhouse Gas Index (AGGI) was developed to provide a simple way of expressing the climate-warming influence of long-lived GHGs. Specifically, the AGGI is the ratio of the total direct radiative forcing, or "climate forcing", from measured GHG concentrations compared to the 1990 baseline year, (chosen because 1990 is the year of the Kyoto Protocol and the publication of the first IPCC Scientific Assessment of Climate Change). Radiative forcing is the difference between the amount of solar energy absorbed by the Earth and the amount of energy that is radiated back to space. 1990 is given an AGGI value of 1.0, and the pre-industrial era is given a value of 0.0 (NOAA/ESRL 2020). The AGGI for 2019 was 1.45, which corresponds to CO2 equivalents atmospheric concentration of 500 ppm. This represents a 45% increase to climate forcing since 1990 and a 1.8% increase over 2018 levels. While the AGGI does not predict the amount the Earth's climate has warmed, it does provide a measure of the effect that GHG emissions have on the climate system.

3.3.2 ALTERNATIVE A (NO ACTION) ENVIRONMENTAL CONSEQUENCES

Under the No Action Alternative, no direct or indirect GHG emissions would occur. Although no new GHG emissions would occur, Federal production levels are expected to remain static or even increase in the short-term and non-Federal oil and gas supply would likely increase if the wells are not developed. The most recent short-term energy outlook (STEO) published by the U.S. Energy Information Association (EIA) (https://www.eia.gov/outlooks/steo/) projects that the world's oil and gas supply and consumption will increase over the next 24 months (through 2023) (EIA 2022a). EIA studies and recent U.S. activities regarding short-term domestic supply disruptions or sudden increases in demand demonstrate that reducing domestic supply (in the near-term under the current supply / demand scenario) may result in the import of more oil and natural gas from other countries, including countries with lower environmental and emission control standards than the United States (EIA, 2021). In addition, current supply disruptions have led to multiple releases from Strategic Petroleum Reserve in order to meet consumer demand and curb price surges.

The EIA 2022 Annual Energy Outlook (AEO) (https://www.eia.gov/outlooks/aeo/) projects energy consumption increases through 2050 as population and economic growth outweighs efficiency gains (EIA 2022b). As a result, U.S. production of natural gas and petroleum and liquids will rise amid growing demand for exports and industrial uses. In the AEO 2022, crude oil production is forecast to rise in 2022 and 2023 to record high level with production then remaining relatively flat through 2050. However, renewable energy will be the fastest-growing U.S. energy source through 2050. Energy-related CO_2 emissions are projected to decrease from 2022 to 2037 due to a transition away from more carbon-intensive coal to less carbon-intensive natural gas and renewable energy for electricity generation. After 2037, CO_2 emissions begin to trend upward as increasing energy consumption, resulting from population and economic growth, outpaces continuing reductions in energy intensity and CO_2 intensity. A detailed

discussion of past, present, and projected global and state GHG emissions can be found in Chapter 6 of the Annual Report and has been incorporated by reference.

3.3.3 ALTERNATIVE B (PROPOSED ACTION) ENVIRONMENTAL CONSEQUENCES

Emissions of GHGs would occur during the well construction/development and well production phases. Sources of emissions would include equipment and vehicle exhaust, drill rigs, completion equipment including fracturing engines, and venting. Operational emissions would occur from storage tank breathing and flashing, truck loading, pump engines, heaters and dehydrators, pneumatics, flaring, fugitives, and vehicle exhaust. GHG emissions that would occur during well construction/development and operation are summarized in Table 3-5. Annual emissions from the Proposed Action are estimated from the BLM Single Oil and Gas Well Emissions Tool, using IPCC AR5 with Carbon Feedback (CF) Global Warming Potential (GWP) values. The wells would be drilled from a new well pad, including a new access road and pipeline to the project area. Emissions related to pad, road, and pipeline construction were only included for one well and are incorporated in the single well construction/development phase in Table 3-5. Once the pad is constructed for one well, these features would be existing, and no surface disturbance would take place for the other well constructed on the pad.

Table 3-5. Estimated Emissions for Drilling and Operating Wells from the Proposed Action

Pollutant	Single Well Construction/ Development Phase:	Single Well Operation Phase:	Single Well Total:	2 Well Construction/ Development Phase:	2 Well Operation Phase:	2 Well Project Total Emissions:
CO2	1,375.91	399.01	1,774.92	2,751.82	798.03	3,549.85
CH4	0.65	3.84	4.49	1.30	7.68	8.98
N2O	1.08E-02	9.98E-04	1.18E-02	2.17E-02	2.00E-03	2.37E-02
CO2e[7] (100-yr GWP)	1,402.54	537.50	1,940.04	2,805.08	1,074.99	3,880.08
CO2e[7] (20-yr GWP)	1,436.04	737.07	2,173.11	2,872.07	1,474.14	4,346.21

3.3.3.1 INDIRECT IMPACTS FROM COMBUSTION OF PRODUCED OIL OR GAS

Indirect GHG emissions would result from the end-use of the fossil fuel. Estimates of downstream emissions are assumed to come from the combustion of all produced oil or gas for domestic heating or energy production. However, the BLM has no authority to direct or regulate

[7] *Global Warming Potential Values – 100-yr: CO2=1, CH4=36, N2O=297. From IPCC AR5 with CF GWP Values. Global Warming Potential Values – 20-yr: CO2=1, CH4=88, N2O=267. From IPCC AR5 with CF GWP Values.*

the end-use of the produced products and an actual end-use may differ from the assumption used for calculating downstream GHG emissions. Also, it is unknown how much oil or gas would be produced from the Proposed Action, so it is assumed that future wells would produce oil and gas in similar amounts as existing wells in the Uinta Basin. Estimate of single well annual production and end-use GHG emissions are incorporated from the BLM Utah Air Monitoring Report (BLM 2021), although IPCC AR5 with Carbon Feedback (CF) GWP values are used in Table 3-6 below. Table 3-6 lists the estimated annual GHG emissions for a single well and for the proposed action. While a range of combustion emissions is presented, for simplicity, the average is used when discussing total emissions.

Table 3-6. Estimated Emissions for Downstream Combustion of Produced Oil and Gas from the Proposed Action – Vernal Field Office

Pollutant	Single Well Annual Emissions (MT)	2 Well Total Annual Emission (MT)
CO2	2,390	4,780
CH4	0.07	0.14
N2O	0.011	0.022
CO2e[8] (100-yr GWP)	2,395.79	4,791.58
CO2e[8] (20-yr GWP)	2,399.10	4,798.20

Emission estimates themselves are presented for disclosure purposes and as a proxy for impacts from the Proposed Action. Emissions can be compared to state and national emissions listed in Table 3-4 to provide a scale of the impact. To express GHG emissions on a scale relatable to everyday life the EPA GHG equivalency calculator can be used (EPA 2022) (https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator). The annual operation, and end-use GHG emissions projected per year from this 2-well project is 5,866.57 MT CO2e/yr. This is equivalent to 1,264 gasoline-powered passenger vehicles driven for one year, or energy use for 739 homes for one year, or would require approximately 6,943 acres of U.S. forests to sequester in one year. As climate change is a cumulative issue, impacts are discussed in the reasonably foreseeable impacts section of this document.

Lifetime GHG emissions can be estimated by multiplying well production life (assuming 30-years) with the operation and combustion emissions and adding the one-time construction emissions. Lifetime estimates for the Proposed Action are below in Table 3-7.

[8] *Global Warming Potential Values – 100-yr: CO2=1, CH4=36, N2O=297. From IPCC AR5 with CF GWP Values. Global Warming Potential Values – 20-yr: CO2=1, CH4=88, N2O=267. From IPCC AR5 with CF GWP Values.*

Table 3-7. Estimated Lifetime GHG Emissions from the Proposed Action

Pollutant	2 Well 30 Year Lifetime Development/ Drilling Emissions (MT)	2 Well 30 Year Lifetime Operation Emissions (MT)	2 Well Total 30-Year Lifetime Average Combustion Emissions (MT)	30-year Lifetime Total Emissions (MT)
CO2	2,751.82	23,940.82	143,400.00	170,092.65
CH4	1.30	230.31	4.20	235.81
N2O	2.17E-02	5.99E-02	0.66	0.74
$CO2e^{9}$ (100-yr GWP)	2,805.08	32,249.80	143,747.40	178,802.29
$CO2e^{9}$ (20-yr GWP)	2,872.07	44,224.18	143,946.00	191,042.25

3.3.3.2 STATEMENT OF UNCERTAINTY

This EA presents quantified estimates of direct and indirect GHG emissions released into the atmosphere from well construction, drilling, completion, production, and end use. However, GHG emission estimates involve significant uncertainty due to unknown factors including actual production, how produced minerals are used, the regulation of GHG parameters by delegated agencies, and whether any Best Available Control Technologies are utilized at upstream or downstream emission location(s). Deeper wells require engines with a greater horsepower and take longer to drill, but may produce for shorter or longer periods. The British Thermal Unit (BTU) content of the product can also vary substantially, which will influence any estimates of GHGs produced or combusted; as can the total volume of liquids produced with the gas stream, which requires handling. Ultimately, while estimates in this EA are based on the best available data, including information from existing operators regarding future drilling plans and targets, these estimates are subject to many conditions that are largely beyond the BLM's control. Unforeseen changes in geologic conditions, drilling technology, economic demand, and laws/policies at the federal, state, or local level could result in outcomes different than projected in this EA.

The rough estimates of indirect CO2e emissions presented above are qualified by uncertainty in potential future production, and in predicting the end uses for the fuels extracted from a particular leasehold. Future production is uncertain regarding actual levels of development over time, levels of development over the life of the lease, new technology, geologic conditions, and the ultimate level of production from any given well (whether reservoir related, or for economic reasons). BLM is using an average production estimate per well for each planning area. This

[9] *Global Warming Potential Values – 100-yr: CO2=1, CH4=36, N2O=297. From IPCC AR5 with CF GWP Values. Global Warming Potential Values – 20-yr: CO2=1, CH4=88, N2O=267. From IPCC AR5 with CF GWP Values.*

approach may overestimate or underestimate in areas where resource conditions depart from "average", but allows the BLM to assume for analysis purposes that all lands have equal potential for production. This may not hold true for site-specific geology, but is a reasonable forecast which assumes all lands may be produced in the future.

After extraction from federal leases, end uses of oil and gas may include refining for transportation fuels, fuel oils for heating and electricity generation, or production of asphalt and road oil. Oil and gas may also be used in the chemical industry, for the manufacture of medicines and everyday household items, plastics, military defense, and synthetic materials. Fossil fuels can be consumed, but not combusted, when they are used directly as construction materials, chemical feedstock, lubricants, solvents, waxes, and other products. Common usage examples include petroleum products in plastics, natural gas in fertilizers, and coal tars in skin treatment products. The BLM does not control the specific end use of the oil and gas produced from federal leases. As a result, the BLM can only provide an estimate of potential GHG emissions by conservatively assuming that all produced oil and gas would eventually be combusted.

3.3.3.3 MONETIZED IMPACTS FROM GHG EMISSIONS

The "social cost of carbon", "social cost of nitrous oxide", and "social cost of methane" – together, the "social cost of greenhouse gases" (SC-GHG) are estimates of the monetized damages associated with incremental increases in GHG emissions in a given year.

On February 20, 2021, President Biden issued Executive Order (E.O.) 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*.[10] Section 1 of E.O. 13990 establishes an Administration policy to, among other things, listen to the science; improve public health and protect our environment; ensure access to clean air and water; reduce greenhouse gas emissions; and bolster resilience to the impacts of climate change.[11] Section 2 of the E.O. calls for Federal agencies to review existing regulations and policies issued between February 20, 2017, and February 20, 2021, for consistency with the policy articulated in the E.O. and to take appropriate action.

Consistent with E.O. 13990, the Council on Environmental Quality (CEQ) rescinded its 2019 "Draft National Environmental Policy Act Guidance on Considering Greenhouse Gas Emissions" and has begun to review for update its "Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews" issued on August 5, 2016 (2016 GHG Guidance).[12] While CEQ works on updated guidance, it has instructed agencies to consider and use all tools and

[10] 86 FR 7037 (Jan. 25, 2021).
[11] *Id*., sec. 1.
[12] 86 FR 10252 (February 19, 2021).

resources available to them in assessing GHG emissions and climate change effects including the 2016 GHG Guidance.[13]

Regarding the use of Social Cost of Carbon or other monetized costs and benefits of GHGs, the 2016 GHG Guidance noted that NEPA does not require monetizing costs and benefits (CEQ 2016).[14] It also noted that "the weighing of the merits and drawbacks of the various alternatives need not be displayed using a monetary cost-benefit analysis and should not be when there are important qualitative considerations."[15]

Section 5 of E.O. 13990 emphasized how important it is for federal agencies to "capture the full costs of greenhouse gas emissions as accurately as possible, including by taking global damages into account" and established an Interagency Working Group on the Social Cost of Greenhouse Gases (the "IWG"). [16] In February of 2021, the IWG published *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide: Interim Estimates under Executive Order 13990* (IWG 2021). This is an interim report that updated previous guidance from 2016. The final report is expected in February 2022.

In accordance with this direction, this subsection provides estimates of the monetary value of changes in GHG emissions that could result from selecting each alternative. Such analysis should not be construed to mean a cost determination is necessary to address potential impacts of GHGs associated with specific alternatives. These numbers were monetized; however, they do not constitute a complete cost-benefit analysis, nor do the SC-GHG numbers present a direct comparison with other impacts analyzed in this document. SC-GHG is provided only as a useful measure of the benefits of GHG emissions reductions to inform agency decision-making.

For Federal agencies, the best currently available estimates of the SC-GHG are the interim estimates of the social cost of carbon dioxide ($SC\text{-}CO_2$), methane ($SC\text{-}CH_4$), and nitrous oxide ($SC\text{-}N_2O$) developed by the IWG on the SC-GHG. Select estimates are published in the Technical Support Document (IWG 2021) and the complete set of annual estimates are available on the Office of Management and Budget's website[17].

The IWG's SC-GHG estimates are based on complex models describing how GHG emissions affect global temperatures, sea level rise, and other biophysical processes; how these changes affect society through, for example, agricultural, health, or other effects; and monetary estimates of the market and nonmarket values of these effects. One key parameter in the models is the discount rate, which is used to estimate the present value of the stream of future damages

[13] *Id.*
[14] 2016 GHG Guidance, p. 32.
[15] *Id*.
[16] E.O. 13990, Sec. 5.
[17] https://www.whitehouse.gov/omb/information-regulatory-affairs/regulatory-matters/#scghgs

associated with emissions in a particular year. A higher discount rate assumes that future benefits or costs are more heavily discounted than benefits or costs occurring in the present (i.e., future benefits or costs are a less significant factor in present-day decisions). The current set of interim estimates of SC-GHG have been developed using three different annual discount rates: 2.5%, 3%, and 5% (IWG 2021).

As expected with such a complex model, there are multiple sources of uncertainty inherent in the SC-GHG estimates. Some sources of uncertainty relate to physical effects of GHG emissions, human behavior, future population growth and economic changes, and potential adaptation (IWG 2021). To better understand and communicate the quantifiable uncertainty, the IWG method generates several thousand estimates of the social cost for a specific gas, emitted in a specific year, with a specific discount rate. These estimates create a frequency distribution based on different values for key uncertain climate model parameters. The shape and characteristics of that frequency distribution demonstrate the magnitude of uncertainty relative to the average or expected outcome.

To further address uncertainty, the IWG recommends reporting four SC-GHG estimates in any analysis. Three of the SC-GHG estimates reflect the average damages from the multiple simulations at each of the three discount rates. The fourth value represents higher-than-expected economic impacts from climate change. Specifically, it represents the 95th percentile of damages estimated, applying a 3% annual discount rate for future economic effects. This is a low probability, but high damage scenario, represents an upper bound of damages within the 3% discount rate model. The estimates below follow the IWG recommendations.

The SC-GHGs associated with estimated emissions from development of the APD are reported in Table 3-8. These estimates represent the present value (from the perspective of 2021) of future market and nonmarket costs associated with CO_2, CH_4, and N_2O emissions from potential well development and operations, and potential end-use. Estimates are calculated based on IWG estimates of social cost per metric ton of emissions for a given emissions year and BLM's estimates of emissions in each year. They are rounded to the nearest $1,000. The estimates assume development will start in 2022 and end-use emissions complete in 2051, based on the projected production life of this project.

Table 3-8. SC-GHGs Associated with Future Potential Development of the Proposed Action

	Social Cost of GHG (2020$)			
	Average Value, 5% discount rate	**Average Value, 3% discount rate**	**Average Value, 2.5% discount rate**	**95th Percentile Value, 3% discount rate**
Development and Operations	$444,000	$1,559,000	$2,317,000	$4,605,000

	Social Cost of GHG (2020$)			
	Average Value, 5% discount rate	**Average Value, 3% discount rate**	**Average Value, 2.5% discount rate**	**95th Percentile Value, 3% discount rate**
End-Use	$2,930,000	$10,490,000	$15,702,000	$31,482,000
Total	**$3,374,000**	**$12,049,000**	**$18,019,000**	**$36,087,000**

3.3.1 CUMULATIVE IMPACTS

The cumulative impact area for GHGs is global because they have long atmospheric lifetimes that allow them to mix throughout the world. Emissions are examined on the state, national, and global scales to provide context for how actions at the local level contribute to climate change. Existing and foreseeable GHG emissions on these scales are presented in detail in BLM Utah Air Monitoring Report (BLM 2021) and are incorporated here. Average annual GHG emissions estimates over the next 30-years from existing and foreseeable oil and gas sources in Daggett, Duchesne, and Uintah Counties are presented in Table 3-9. The high and low oil price scenarios for the Rocky Mountain region from the U.S. Energy Information Administration's 2020 Annual Energy Outlook to provide a range of future oil and gas production growth and related GHG emissions in Utah. The 30-year aggregate of projected GHG emissions from future oil and gas development in Utah is presented in Table 3-10. From 2020 to 2050, the foreseeable aggregate GHG emissions from Federal oil and gas development in Utah is estimated to be 2.85% of emissions from all U.S. Federal oil and gas development.

Table 3-9. 2020 to 2050 Average Annual Long-term Foreseeable Oil and Gas Emissions.

Field Office	Oil Price	Emissions (MT CO2e/year)			
		Construction	**Operations**	**Combustion**	**Total**
Vernal	**Low**	99,180	4,363,727	22,587,180	**27,050,087**
	High	121,459	5,343,992	27,621,237	**33,086,689**
State Total (Federal and Non-federal)	**Low**	117,925	6,961,967	27,961,011	**35,040,903**
	High	144,415	8,525,899	34,073,090	**42,743,405**
Federal Total	**Low**	64,554	3,811,109	15,306,373	**19,182,037**
	High	79,056	4,667,234	18,652,238	**23,398,528**

Table 3-10. 2020 to 2050 Aggregate Long-term Foreseeable Oil and Gas Emissions.

Field Office	Oil Price	Emissions (MMT CO2e)			
		Construction	Operations	Combustion	Total
Vernal	**Low**	3.075	135.276	700.203	**838.553**
	High	3.765	165.664	856.258	**1,025.687**
State Total (Federal and Non-federal)	**Low**	3.656	215.821	866.791	**1,086.268**
	High	4.477	264.303	1,056.266	**1,325.046**
Federal Total	**Low**	2.001	118.144	474.498	**594.643**
	High	2.451	144.684	578.219	**725.354**

In general, there is world consensus that limiting global warming can prevent some of the more dire consequences associated with projected climate change (IPCC 2018). To limit warming, the world must achieve carbon neutrality or net-zero emissions, which is a balance between CO2 emissions and sinks. Carbon budgets provide estimates of the remaining cumulative CO2 emissions until the time global net-zero emissions should be achieved in order to limit global warming to a specified amount, usually 1.5°C or 2.0°C. For limiting warming to 1.5°C, the data suggest a range of ~420 gigatons (Gt)CO2 for a two-thirds chance and ~580 GtCO2 for an even chance (50/50). The budget for limiting warming to 2.0°C is ~1,170 GtCO2 for a two-thirds chance and ~1,500 GtCO2 for an even chance (50/50).

These projections contain uncertainties characteristic of scientists' current understanding of Earth's climate-influencing systems, for example feedbacks and the forcing/response associated with non-CO2 GHGs. The uncertainty range associated with the current budget estimate is ±400 GtCO2. This large uncertainty range (relative to the target budget) illustrates how difficult climate analysis is. These uncertainties are important to the probability of success for a given budget estimate as warming approaches the target limit. It is likely that the absolute budget targets, or at least the estimated time until emissions are required to reach carbon neutrality, will change as emissions trajectories fluctuate and climate science continues to evolve.

Annually the United Nations (UN) publishes an emissions gap report, which provides an assessment of how actions and pledges of countries affect global GHG emissions trends, and how these trends compare to emissions trajectories consistent with long-term goals for limiting global warming (UN 2020). The emissions gap is the difference between GHG emissions levels consistent with limiting global warming to 1.5°C or 2.0°C, and the emissions levels consistent with current reduction commitments by member nations. By 2030, the UN estimates that to limit warming to 2.0°C or 1.5°C, global annual emissions should be approximately 41 GtCO2e and 25 GtCO2e, respectively. Based on current emissions pledges, the global emissions gap in 2030 would be 15 GtCO2e above the 2.0°C warming goal and 32 GtCO2e above the 1.5°C warming goal. To bridge the gap, nations must implement policies to strengthen emissions reductions commitments threefold to achieve the 2.0°C goal, or fivefold to achieve the 1.5°C goal. If

implementation of stronger emissions reduction policies is delayed, later policies would be even more stringent to achieve global warming goals. Presently, the United States has not adopted emissions policies or pledges related to Federal oil and gas leasing.

The IPCC developed various emissions scenarios called Representative Concentration Pathways (RCPs) to provide a consistent foundation for climate change modeling and impact assessment. The RCPs are a set of GHG emissions and concentrations trajectories based on potential future energy use, population, and changes to air pollution and land use. There are four scenarios named after the amount of radiative forcing in watts per square meter (RCP2.6, RCP4.5, RCP6, and RCP8.5) that is projected to occur by the year 2100 if actual atmospheric concentrations of GHGs follow one of these paths. There are several other pathways that lead to each level of radiative forcing, but these four RCPs provide plausible emissions paths for assessing the range of possible changes to the climate. The projected increase of global mean surface temperature by the end of the 21st century (2081–2100) relative to 1986–2005 is likely to be 0.9°C to 2.3°C under RCP2.6, 1.7°C to 3.2°C under RCP4.5, 2.0°C to 3.7°C under RCP6.0, and 3.2°C to 5.4°C under RCP8.5 (BLM 2021). Since the development of the RCP's, research has shown that the RCP8.5 scenario is an unlikely outcome, because it assumes a fivefold increase of coal use by the end of the century, and does not consider the plummeting price of low carbon technologies that has occurred over the past decade (Hausfather & Peters 2020). This same research found that current emissions policies estimate ~3.0 °C warming, above 1850-1900 average temperatures, by the end of the century. In a recent report, the International Energy Agency (IEA) identified a narrow pathway that reaches global net-zero emissions by 2050 and limits warming to 1.5 ºC (RCP 2.6 or below). The pathway requires countries to strengthen and successfully implement energy and climate policies (IEA 2021).

The United States Geological Survey (USGS) National Climate Change Viewer (USGS 2021) can evaluate potential climate change at the state and county level. Data presented in the climate viewer is intended to assist the scientific community in conducting studies on climate change and enhance public understanding of possible future impacts to their local communities. The tool provides historical (1950-2005) and future (2006-2099) climate projections under a moderate (RCP4.5) and aggressive (RCP8.5) emissions scenario. The tool compiles projections from 30 different global climate models. Projected changes to Utah's maximum and minimum values for temperature and precipitation are presented in the BLM Utah Air Monitoring Report (BLM 2021).

3.4 WILDLIFE: MIGRATORY BIRDS AND RAPTORS - AFFECTED ENVIRONMENT

Migratory Birds

The Migratory Bird Treaty Act (MBTA) was implemented for the protection of migratory birds. Unless permitted by regulations, the MBTA makes it unlawful to pursue, hunt, kill, capture,

possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products. In addition to the MBTA, Executive Order 13186 sets forth the responsibilities of Federal agencies to further implement the provisions of the MBTA by integrating bird conservation principles and practices into agency activities and by ensuring that Federal actions evaluate the effects of actions and agency plans on migratory birds. The Bald and Golden Eagle Protection Act provides additional protection for the two eagle species. The Utah Partners in Flight (UPIF) has prioritized migratory birds that are considered "most in need of conservation action, or at least need to be carefully monitored throughout their range within Utah." These are also the species "that will be most positively influenced by management as well as those species with the greatest immediate threats" according to UPIF (Parrish, Howe, & Norvell, 2002).

High desert scrub and shrub-steppe migratory birds occupy much of the habitat within the 5,853,000 acres in the greater Uinta Basin area. Numerous species may migrate through or nest within the project area. The following migratory birds may inhabit the project area, including those that are classified as High-Priority species by Utah Partners in Flight (Parrish, Howe, & Norvell, 2002) and Utah BLM Sensitive species as defined in BLM Manual 6840 (marked by an *), according to the predominant habitat type found within the proposed project area:

- High Desert Scrub: Bewick's wren, black phoebe, black-chinned sparrow, black-throated sparrow, Brewer's sparrow, burrowing owl*, chukar, golden eagle*, gray flycatcher, green-tailed towhee, horned lark, lark bunting, lark sparrow, loggerhead shrike, mountain bluebird, mountain plover*, northern harrier, northern mockingbird, prairie falcon, sage sparrow*, sage thrasher, Say's phoebe, vesper sparrow, and western meadowlark.
- Shrub-Steppe: Brewer's sparrow, chukar, ferruginous hawk*, greater sage-grouse*, mountain bluebird, mountain plover*, sage sparrow, sage thrasher, vesper sparrow, and western meadowlark.

Burrowing Owls

The U.S. Fish and Wildlife Service (USFWS) has identified the burrowing owl as a Bird of Conservation Concern at the national level. Burrowing owls occupy a wide variety of arid and semi-arid environments including open grassland and prairies, pasture, road and railway rights-of-way, as well as urban habitats such as golf courses, cemeteries, and airports (Dechant, et al., 1999). Burrowing owl nesting habitat consists of open areas with mammal burrows or natural cavities surrounded by sparse vegetation and bare ground (Green & Anthony, 1997; Klute, et al., 2003). In Utah, prairie dog burrows are the main source of nest sites for burrowing owls.

BLM has reviewed district files and found that the proposed project and pipeline is within 0.25 miles of one known white-tailed prairie dog colony, and white-tailed prairie dog burrowing activity was observed in the project area by a BLM biologist during an on-site visit on April 21, 2022; thus, nesting burrowing owls would potentially be impacted by the alternatives. Burrowing

owls occupy 180,200 acres of white-tailed prairie dog habitat in the Uinta Basin, per BLM district files.

3.4.1 ALTERNATIVE A (NO ACTION) ENVIRONMENTAL CONSEQUENCES

Under the No Action Alternative there would not be any impacts to migratory birds or raptors.

3.4.2 ALTERNATIVE B (PROPOSED ACTION) ENVIRONMENTAL CONSEQUENCES

Migratory Birds and Raptors

Potential effects of the Proposed Action Alternative on avian species include loss or degradation of 10.91 acres of potential nesting and foraging habitats and disturbance to birds up to 1 mile from the proposed action from construction noise and human presence (including harassment, displacement, and noise). These impacts could also cause nest or young abandonment. The Proposed Action could fragment and manipulate the surrounding habitats and introduce or spread invasive plant species. In general, such an environmental shift would probably have negative impacts on wildlife species and would favor non-native and readily adaptive species. Potential impacts to migratory birds would also be dependent upon the time when project activities would occur. If these activities occur in the late fall, most of the species would have left the area during winter migration. If construction were to occur during the spring or summer months, it could cause birds to move into other adjacent habitats or into habitats where interspecific and intraspecific competition between species may increase. Surface and noise disturbance associated with project activities would be temporary. By following the mitigation measures outlined below, these impacts would be minimized.

MITIGATION MEASURES

Migratory Birds

To protect migratory birds during the breeding season, USFWS Utah Field Office recommends a minimum timing restriction of April 1 – July 15 for ground disturbing activities, including habitat removal by clearing or cutting of vegetation (USFWS, 2020). If construction involving ground disturbing activities using heavy equipment were scheduled during the migratory bird nesting season (April 1 – July 15), a site-specific survey for migratory bird nests must be performed 7-10 days before the project starts to inventory any nesting activity. Any documented active nests sites would be avoided by a 100-foot buffer. The survey may be performed by a BLM or other biologist as approved by the authorized officer.

Burrowing Owl

If construction or drilling activities are scheduled during the burrowing owl nesting season (March 1- August 31), a site-specific survey for burrowing owl nests must be performed 7-10 days prior to ground disturbing activities to inventory any nesting activity. Any documented active nests sites would be avoided by a 0.25-mile buffer. The survey could be performed by a BLM biologist or another biologist approved by the authorized officer.

3.4.3 CUMULATIVE IMPACTS

The cumulative impact area for migratory birds and raptors is the Vernal Field Office planning area (7,325,500 acres). Impacts to 21 migratory birds and raptor species in the cumulative impact area would be dependent upon the seasonal timing of project activities. Any activities completed in the late fall would be less likely have an impact to avian species because many of the species would have left for winter grounds. Reclamation of the disturbance area during and after the life of the proposed action could potentially restore some of the nesting and foraging areas lost to the initial disturbance.

Past, present, and future uses and impacts in the cumulative impact area may include those from oil and gas development, realty actions, urbanization, continued agricultural activities and increased recreational impacts. Impacts include loss of migratory bird and foraging habitat, habitat fragmentation, and disruption or alteration of seasonal migration routes. Birds that avoid nesting within the immediate area of the project would have available habitat within the remaining intact reasonably foreseeable environmental trends and planned actions area.

Development will likely contribute to a sustained reduction in the overall abundance of most affected species, but it would not be expected to result in a trend that would compromise the viability of any migratory bird population or the use of broader landscapes. Although the utilization of some habitat would be diminished because of surface disturbances and displacement associated with the proposed action, the impacts would likely be minimal considering the extent of available habitat across the region.

3.5 WILDLIFE: NON-USFWS DESIGNATED – AFFECTED ENVIRONMENT

Big Game (Pronghorn)

Pronghorn are the primary big game species found within the project area (UDWR, 2017).

Crucial pronghorn year-long habitat that includes both crucial summer range and crucial winter range has been identified within the proposed project area. The function of crucial summer range is to protect and provide shelter and forage to big game, including fawning habitat. The presence of succulent forbs in the vegetative forage mix is essential to lactating females and thus fawn survival during the spring and early summer (Ellis and Travis, 1975; Howard et al., 1990). The function of crucial winter range is to protect and provide shelter and forage to big game, ensuring

their survival during periods of significant winter stress. High quality browse, protruding above snow level, can be important for overwinter survival in some pronghorn populations (Yoakum, 2004). Throughout the year in Utah, pronghorn generally occupy shrub-steppe habitat, but may migrate between areas featuring preferable winter and summer range conditions (UDWR, 2017). Migration corridors to these crucial habitats can be just as important as the habitats themselves, and barriers to pronghorn movements could influence behavior or even survival of these animals.

White-tailed Prairie Dog

The white-tailed prairie dog (WTPD) is a BLM Sensitive species and is also considered a sensitive species by the Utah Division of Wildlife Resources. The WTPD mainly occurs in the eastern part of the state, including the Uinta Basin and the northern portion of the Colorado Plateau. Range wide, the WTPD population is estimated at 1-2 million individuals (Knowles 2002). In the northeastern part of the state, WTPD occur in areas around Flaming Gorge/Manila, Diamond Mountain, and in the Uinta Basin. WTPD colonies provide habitat for burrowing owls and other wildlife species. BLM has reviewed district files and found that the proposed project and pipeline is within 0.25 mile of one documented WTPD colony. A site visit confirmed WTPD burrowing activity along the pipeline route. WTPDs occupy 180,200 acres in the Uinta Basin, per BLM district files.

3.5.1 ALTERNATIVE A (NO ACTION) ENVIRONMENTAL CONSEQUENCES

Under the No Action Alternative, there would not be any new impacts to pronghorn or white-tailed prairie dog.

3.5.2 ALTERNATIVE B (PROPOSED ACTION) ENVIRONMENTAL CONSEQUENCES

Big Game (Pronghorn)

The proposed action could result in loss of 10.91 acres of pronghorn habitat. Displacement from foraging areas and a loss of habitat used for cover and fawning may occur because of the surface disturbance (UDWR, 2017). Pronghorn could also avoid a larger area of habitat around the project due to construction noise and human presence. Some studies have reported that impacts begin to manifest on ungulates such as pronghorn when well densities begin to reach 0.1-0.4 wells per square kilometer and 0.18-1.05 linear kilometers of roads per square kilometer (Naugle et al., 2011). There may also be a delay in detection of impacts (Naugle et al., 2011).

White-tailed Prairie Dog

The proposed action could result in loss of WTPD burrows and habitat. Displacement from foraging areas may also occur because of the surface disturbance. Additional impacts include

fragmentation of habitat, noise from construction, and increased human activity including traffic which could displace WTPDs from their habitats.

3.5.3 CUMULATIVE IMPACTS

Big Game (Pronghorn)

The cumulative impact area for pronghorn is the South Slope, Bonanza/Diamond Mountain hunt unit, which consists of 785,225 acres of public, private, and tribal lands. Population estimates for pronghorn for this hunt unit are 700 individuals (UDWR, 2017). (https://www.onxmaps.com/maps/hunting/us/utah/unit/ut-pronghorn-hunt-unitsouth-slope-bonanza-diamond-mtn). Planned actions include oil and gas development, urbanization, grazing, and increased recreational impacts. Utilization of pronghorn habitat for human activities would disturb habitat and displace individuals or herds. Development of the proposed action would likely contribute to a sustained reduction in the overall abundance of most affected species, but would not be expected to result in a trend compromising the viability of pronghorn population or their use of broader landscapes.

White-tailed Prairie Dog

The cumulative impact area for WTPD is the total documented area of colonies documented in the Vernal Field Office (180,200 acres), per BLM district files, though additional WTPD suitable habitat and undocumented colonies may also be present within the Vernal Field Office. Planned actions include oil and gas development, urbanization, grazing, and increased recreational impacts. Utilization of WTPD habitat for human activities would disturb habitat and displace individuals. Development of the Proposed Action would likely contribute to a sustained reduction in the overall abundance of most affected species, but would not be expected to result in a trend compromising the viability of WTPDs or their use of broader landscapes.

3.6 PLANTS: NATIVE VEGETATION - AFFECTED ENVIRONMENT

The primary native plant communities in the project area are: Inter-Mountain Basins Big Sagebrush Shrubland, Colorado Plateau Mixed Low Sagebrush Shrubland, Inter-Mountain basins Mixed Salt desert Scrub, Grayia spinosa Shrubland Alliance, and Annual Grassland. Descriptions of these plant communities, as well as their common and dominant plant species are described in Appendix B. The Annual grasslands community type only exists in disturbed areas, is not native, and is not analyzed for loss of habitat but is only used in an estimate of existing disturbance.

3.6.1 ALTERNATIVE A (NO ACTION) ENVIRONMENTAL CONSEQUENCES

Under the No Action alternative, there would be no new direct or indirect impacts to native plant communities in the area.

3.6.2 ALTERNATIVE B (PROPOSED ACTION) ENVIRONMENTAL CONSEQUENCES

Implementation of the Proposed Action would disturb 10.91 acres of BLM-managed surface, resulting in direct and indirect impacts to the native plant communities in the project area.

Direct impacts to native plant communities (i.e., modification of community structure, species composition, and extent of cover types) would occur from disturbance or removal of vegetation resulting from construction.

Indirect impacts to vegetation may include short-term and long-term increased potential for noxious weed invasion, exposure of soils to elevated erosion, soil compaction, shifts in overall species composition and/or changes in plant density, and increased potential for wind erosion of disturbed surfaces into adjacent areas.

Dust settling on vegetation can block stomata, increase leaf temperature, and reduce photosynthesis (Thompson et al. 1984; Farmer 1993). Airborne dust generated by vehicles could inhibit photosynthesis and transpiration in native plant species. Inhibited photosynthesis could reduce individual plants' growth rate, reproductive capacity, and ability to persist. However, native desert vegetation naturally experiences chronic exposure to windblown dust, and so would likely be resistant to this impact, except in extreme cases along travel corridors where sand loosened by vehicles could accumulate and partially bury adjacent individual plants. Because intensive dust creation would only occur during construction, dust pollution from construction would only have short-term impacts on native plant communities.

The operator has submitted both interim and final reclamation plans and a weed treatment plan as part of the Surface Use Plan of Operations. Ongoing environmental surface inspections will be conducted to ensure compliance and reclamation success. If these design features are effectively applied, long-term impacts to native plant communities would not be likely to occur. Successful reclamation would meet the criteria of the Green River District Reclamation Guidelines via operator-selected reclamation methods and monitoring for reclamation success.

3.6.2.1 MITIGATION MEASURES

- Only water (no chemical, reclaimed production water, or oil field brine) would be used for dust suppression during construction
- Traffic would stay on designated routes and other cleared/approved areas.

3.6.3 CUMULATIVE IMPACTS

The cumulative impact analysis area for native plant communities is the total 554,936 acres of these plant communities within the BLM-managed Monument Butte - Red Wash Reasonably Foreseeable Development Area (RFD) for the Vernal field office. Nine native plant community types are present in this analysis area (see Table 3-11).

Cumulative impacts from past, present, and future land uses may include those from oil and gas development and recreation. Cumulative impacts to native vegetation are a derivative of surface disturbance and include fragmentation and isolation of plant populations and communities, loss of individual plants, increased erosion and loss of soil, increased resource competition from introduced and invasive plants, and loss of pollinators and pollinator habitat. These impacts independently and jointly affect plant growth, reproduction, and survival, thus contributing to the overall health status of plant communities. Impacts were analyzed by comparing the Proposed Action's disturbance, existing disturbance, and potential future disturbance in relation to available native plant habitat.

Table 3-11. Monument Butte -Red Wash Reasonably Foreseeable Development Area (RFD)

Plant Community	RFD Acres	% RFD
Developed and Agriculture	5134	6.5%
Introduced Plant Communities	71273	12.8%
Total Existing Disturbance	**76406**	**19.4%**
Water (Not included in analysis)	2390	3.0%

Plant Community	RFD Acres	% RFD
Lower Montane Shrublands	493	0.1%
Lower Montane Woodlands	21	0.0%
Mixed Conifer/Aspen Forest/Alpine Meadow	68	0.0%
Mixed Desert Shrublands and Grasslands	242950	43.8%
Mountain Big Sagebrush Steppe	3	0.0%
Pinyon-Juniper Woodlands	24300	4.4%
Riparian and Wetlands	4109	0.7%
Sagebrush Steppe	241129	43.5%
Sparsely Vegetated and Barren	41863	7.5%
Total BLM acres	554936	

Energy development is ongoing in this area with multiple wells being reclaimed, maintained, and constructed at any given time. This constant change complicates calculating disturbance, but best estimates for plant community types and acreage were identified using data from the Vegetation tool at Landfire.gov, and the Vernal Resource Management Plan. Project shape files were used to clip disturbance areas from the Landfire layer, then acreage for each plant community type was calculated using the calculate geometry feature in ArcGIS. The Landfire plant categories of *Developed and Agriculture* and *Introduced Plant Communities* were used to estimate existing disturbance.

The disturbance that would occur from the proposed action is based on information provided by the applicant. Future disturbance was estimated based on future well estimates obtained from the Vernal Resource Management Plan, with disturbance being calculated assuming an average disturbance of 2.5 acres for a single-well pad. However, there are numerous multiple-well pads with ≤1 acre of disturbance per well, so the estimate of total disturbance likely exceeds actual future disturbance. Note that past well locations are either in the process of being reclaimed or have been reclaimed.

A summary of existing disturbance, disturbance from this project, and potential future disturbance can be seen in Table 3-12 below. Impact from the current project would be less than 0.1% of the RFD.

Table 3-12. Summary of Disturbance

Disturbance	Wells	Acres	Percent of RFD
Reclaimed Well Pads	1444	3610	0.7
Existing Disturbance	6074	76406	13.8
Estimated Future Wells	475	4800	0.9
Total Existing and Future	6549	81206	14.6
This Project	**2**	**10.91**	**0.0**
Existing disturbance is not limited to oil and gas. Future is limited to oil and gas because no data were available to estimate other forms of future disturbance.			

3.7 PLANTS: BLM SENSITIVE – AFFECTED ENVIRONMENT

Horseshoe milkvetch (*astragalus equisolensis*) is a Utah BLM sensitive plant species and former candidate for federal listing. It is a narrow endemic from two known locations: the Horseshoe Bend area of the Green River in Uintah County, Utah, and the rim above the Deloris River in Mesa County, Colorado. Horseshoe milkvetch grows in mixed desert and salt desert shrub communities and occurs on three types of substrata: 1) river terrace sands and gravels overlying the Duchesne River Formation; 2) sandy-silty soils that weather directly from the Duchesne River Formation; 3) and in crevices of Duchesne River Formation.

A total of 112.31 acres including 300 feet from the project area were surveyed for Horseshoe milkvetch by Outlaw Engineering, Inc. in February of 2022, with follow-up spot-check surveys in May of 2022. Of the total acres surveyed, 58.57 acres (~52%) were identified as suitable habitat for horseshoe milkvetch. While 4.56 acres of this suitable habitat is in the immediate project area, the surveys did not document any individual horseshoe milkvetch plants in the project area.

3.7.1 ALTERNATIVE A (NO ACTION) ENVIRONMENTAL CONSEQUENCES

Under the No Action alternative, there would be no new direct or indirect impacts to horseshoe milkvetch suitable habitat in the project area.

3.7.2 ALTERNATIVE B (PROPOSED ACTION) ENVIRONMENTAL CONSEQUENCES

Implementation of the Proposed Action would disturb 4.56 acres of suitable horseshoe milkvetch habitat in the project area.

Potential direct impacts to horseshoe milkvetch would include loss of 4.56 acres of suitable habitat. Indirect impacts to Horshoe milkvetch would include loss of habitat and forage opportunities for pollinators of the species; habitat modification by invasive weed species which may compete with individuals; accidental spray or drift of herbicides used during invasive plant control; and deposition of fugitive dust from construction activities and vehicle traffic on unpaved roads.

Dust settling on vegetation can block stomata, increase leaf temperature, and reduce photosynthesis (Thompson, Mueller, Fluckiger, & Rutter, 1984; Farmer, 1993). Because intensive dust creation would only occur during construction, dust pollution from construction would only have short-term impacts in horseshoe milkvetch habitat.

3.7.2.1 MITIGATION MEASURES

- Only water (no chemical, reclaimed production water, or oil field brine) would be used for dust suppression during construction.
- Traffic would stay on designated routes and other cleared/approved areas.
- All disturbed areas would be reclaimed with plant species native to the region, or seed mixtures approved by the BLM.

3.7.3 CUMULATIVE IMPACTS

The cumulative impact analysis area for horseshoe milkvetch is its potential habitat polygon identified by BLM GIS suitable habitat models. This area totals 72,868 acres on BLM, state of Utah, and privately held lands. There are 487.5 acres of existing disturbance and an estimated 127.5 acres of future disturbance in this impact analysis area. Combined existing and future disturbance estimates would total 615 acres, or only 0.84% of the total potential habitat polygon. This number includes the 10.91 acres for the proposed action, as shown in the Table 3-13. Below.

Due to inclusion of areas of unsuitable habitat within the potential habitat polygon, the actual acreage of suitable habitat would be less than 72, 868 acres. However, a complete survey of actual suitable habitat within the modeled polygon has not yet been performed, nor has the actual suitable habitat been quantified. Therefore, actual impacts to horseshoe milkvetch from past, present, and reasonably foreseeable actions may differ from those described for the total impact analysis area, depending on the exact distributions of these actions relative to actual suitable habitat.

TABLE 3-13. DISTURBANCE SUMMARY FOR CUMULATIVE IMPACTS

Cumulative Impacts – Horseshoe Milkvetch			
Disturbance Status	**Wells**	**Acres**	**%RFD**
Reclaimed Well Pads	198	495	0.68%
Existing Disturbance	195	487.5	0.67%
Future Wells	51	127.5	0.17%
Total Existing and Future	246	615	0.84%
Proposed Action	2	10.91	

Energy development is ongoing in this area with multiple wells being reclaimed, maintained, and constructed at any given time. This constant change complicates calculating disturbance, but best estimates for existing disturbance in the impact analysis area were obtained using data from the UDOGM Well Status GIS layer. Future disturbance was estimated based on wells with “NEW” status (APDs submitted) in the UDOGM Well Status Layer. Disturbance was calculated assuming an average disturbance of 2.5 acres for a single-well pad. However, there are numerous multiple-well pads which average ≤1 acre of disturbance, so the estimate of total disturbance

likely exceeds actual future disturbance. Note that past well locations are either in the process of being reclaimed or have been reclaimed.

Cumulative impacts to horseshoe milkvetch are a derivative of surface disturbance, and include dust impacts to individuals associated plant communities in habitat, introduction and spread of non-native and invasive plant species, and plant and pollinator habitat loss and destruction. The Proposed Action would result in approximately 10.91 acres of new surface disturbance within the cumulative impact analysis area. The No Action alternative would not result in an accumulation of impacts. However, previously disturbed areas and areas impacted by existing roads and recreation activities would remain.

4.0 CONSULTATION AND COORDINATION

4.1 INTRODUCTION

The issue identification section of Chapter 1 identifies those issues analyzed in detail in Chapter 3. The issues were identified through the public and agency involvement process described below.

4.2 PERSONS, GROUPS, AND AGENCIES CONSULTED

Table 4-1 lists the persons, groups, and agencies that were coordinated with or consulted during the preparation of this project. The table also summarizes the conclusions of those processes.

Table 4-1. Coordination and Consultation

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
Utah State Historic Preservation Office	National Historic Preservation Action Section 106	Utah SHPO concurred with a finding of "No Historic Properties Affected" based on the findings presented in archaeological project U22HY0040 on 2/8/2022. This archaeological report covers 100% of the proposed project.
Confederated Tribes of the Goshute, Eastern Shoshone, Hopi Tribe, Navajo Nation, Northwestern Bands of the Shoshone, Pueblo of Jemez, Pueblo of Laguna, Santa Clara Pueblo, Southern Ute, Ute Indian tribe, Ute Mountain Ute, the White Mesa Ute, and Zia Pueblo	Government to Government Consultation Policy	There are no Native American Religious concerns for this project. Consultation for oil and gas development in this area was conducted for the Deadman Bench area beginning 1/8/2004. Several tribes responded in 2004 with no concerns but asked to be updated if projects resulted in new or significant information. There are no identified Native American sites within the project area.

4.3 SUMMARY OF PUBLIC PARTICIPATION

The public was notified of this project by posting it online to the BLM's public-access National NEPA Register on May 3, 2022. Issues were identified by the BLM Interdisciplinary Team as documented in the Interdisciplinary Team Checklist (Appendix A).

Table 4-2: BLM Preparers

Name	Title	Responsible for the Following Section(s) of this Document
Daniel Emmett	Natural Resource Specialist	Project Lead
Cal Deberard	Wildlife Bio	Wildlife
Sandra Robins	Botanist	Botany
Adam Deppe	Physical Scientist (Air Quality)	Air Quality
Joel Ward	Planning and Environmental Coordinator	Quality Assurance

5.0 REFERENCES, GLOSSARY AND ACRONYMS

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5.2 GLOSSARY OF TERMS

AUTHORIZED OFFICER: The decision maker who has the delegated authority to for that decision.

BEST MANAGEMENT PRACTICES: A suite of techniques that guide, or may be applied to, management actions to aid in achieving desired outcomes.

CONDITIONS OF APPROVAL: Conditions or requirements under which a decision is made.

ENVIRONMENTAL ASSESSMENT: A concise public document that analyzes the environmental impacts of a proposed action and provides sufficient evidence to determine the level of significance of the impacts.

ENVIRONMENTAL IMPACT STATEMENT: A detailed written statement of environmental effects of a major federal action significantly affecting the quality of the human environment.

IMPACT: A modification of the existing environment caused by an action (such as construction or operation of facilities).

MINIMIZE: To reduce the adverse impact of an operation to the lowest practical level.

MITIGATION: Steps taken to 1) avoid an impact; 2) minimize an impact; 3) rectify an impact; 4) reduce or eliminate an impact over time; or, 5) compensate for an impact.

MONITORING: The process of collecting and assessing data/information necessary to evaluate the effectiveness of a decision or its conditions of approval.

NO ACTION ALTERNATIVE: The most likely condition to exist in the future if current management direction were to continue unchanged.

PERMIT: A revocable authorization to use public land for a specified purpose for a specified period of time.

PROJECT AREA: The area of land potentially affected by a proposed project.

SIGNIFICANCE: A determination of the degree or magnitude of importance of an effect, whether beneficial or adverse.

5.3 LIST OF ACRONYMS

The below table contains a list of acronyms and their meanings used in this document.

Table 5-1: Acronyms

Acronym	Meaning
AGA	American Gas Association
AGGI	Annual Greenhouse Gas Index
ANC	Acid Neutralizing Capacity
APD	Application for Permit to Drill
AQ	Air Quality
AQRVs	Air Quality Related Values
ARMS	Air Resource Management Strategy
AR5	IPCC Fifth Assessment Report
BLM	Bureau of Land Management
BLM-OGD	Projected Oil and Gas Development Activities Under BLM Jurisdiction in Uintah And Duchesne Counties
BMP	Best Management Practice
BTU	British Thermal Unit
CAA	Clean Air Act
CEQ	Council of Environmental Quality
CF	Carbon Feedback
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
COA	Condition of Approval
DAT	Deposition Analysis Threshold
DAQ	Division of Air Quality
DR	Decision Record
dV	Deciview
EA	Environmental Assessment
EIS	Environmental Impact Statement

Acronym	Meaning
E.O	Executive Order
EPA	Environmental Protection Agency
FO	Field Office
FONSI	Finding of No Significant Impact
GHGs	Greenhouse Gases
GIS	Geographic Information System
Gt	Gigatons
GWP	Global Warming Potential
HAP	Hazardous Air Pollutants
in.	Inches
IPCC	Intergovernmental Panel on Climate Change
IWG	Interagency Working Group on the Social Cost of Greenhouse Gases
kg/ha-yr	Kilogram Per Hectare Per Year
km	Kilometers
MT	Metric Tons
NAA	Non-attainment Areas
NAAQS	National and Utah Ambient Air Quality Standards
NCA_4	Fourth National Climate Assessment
NEPA	National Environmental Policy Act
NO_x	Nitrogen Oxides
NO_2	Nitrogen Dioxide
NSO	No Surface Occupancy
N_2O	Nitrous Oxide
O_3	Ozone
$PM_{2.5}$	Particulate Matter with diameters that are generally 2.5 micrometers and smaller
PM_{10}	Particulate Matter with diameters that are generally 10 micrometers and smaller
PSD	Prevention of Significant Deterioration
ppb	Parts Per Billion
ppm	Parts Per Million
RCP	Representative Concentration Pathways

Acronym	Meaning
ROW	Right-of-way
SC-CH_4	Social Cost of Methane
SC-CO_2	Social Cost of Carbon Dioxide
SC-GHG	Social Cost of Greenhouse Gases
SC-N_2O	Social Cost of Nitrous Oxide
SO_x	Sulfur Oxides
SO_2	Sulfur Dioxide
tpy	Tons Per Year
UDAQ	Utah Division of Air Quality
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
USGS	U.S. Geological Survey
VFO	Vernal Field Office
VOC	Volatile Organic Compounds
Yr	Year
°C	Degrees Celsius
°F	Degrees Fahrenheit
%	Percent

APPENDICES

APPENDIX A: INTERDISCIPLINARY TEAM CHECKLIST

INTERDISCIPLINARY TEAM CHECKLIST

RESOURCES AND ISSUES CONSIDERED (INCLUDES SUPPLEMENTAL AUTHORITIES APPENDIX 1 H-1790-1)

Project Title: Finley's LP Pad Wells

NEPA Log Number: DOI-BLM-UT-G010-2022-0055-EA

File/Serial Number: UTU089363 and UTU089238

Project Leader: Daniel Emmett

DETERMINATION OF STAFF: *(Choose one of the following abbreviated options for the left column)*

NP = not present in the area impacted by the proposed or alternative actions

NI = present, but not affected to a degree that detailed analysis is required

PI = present with potential for relevant impact that need to be analyzed in detail in the EA

NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section D of the DNA form. The Rationale column may include NI and NP discussions.

Appendix Table A-1. Interdisciplinary Team Checklist

Determination	Resource/Issue	Rationale for Determination	Signature	Date
PI	Air Quality Emissions	The proposed action would result in criteria air pollutant emissions. Emissions would occur from vehicle transportation to and from the site, heavy construction equipment, well drilling, and well operation. A detailed analysis has been completed for this resource. The proposed project is located within the Uinta Basin Ozone Nonattainment Area (Marginal). 40 CFR 93.153 defines the de minimis thresholds for nitrogen oxides (NOx) and volatile organic compounds (VOC) in a marginal ozone nonattainment area as	Adam Deppe	5/16/2022

Determination	Resource/Issue	Rationale for Determination	Signature	Date
		100 tons per year (tpy). Potential emissions from this project over an annual basis are calculated to be below de minimis levels. The emissions inventory for the project total 22.59 tons of NOx and 27.03 tons of VOCs. A general conformity determination is filed in the project record.		
PI	Greenhouse Gas Emissions	The proposed action would result in greenhouse gas emissions. Emissions would occur from vehicle transportation to and from the site, heavy construction equipment, well drilling, and well operation. A detailed analysis has been completed for this resource.	Adam Deppe	5/16/2022
NP	BLM natural areas	No BLM natural areas are designated by the Vernal RMP in the project area.	Jessica Farmer	5/23/2022
NP	Cultural: Archaeological Resources	A Class III intensive pedestrian survey of the Area of Potential Effect (APE) for the proposed action was conducted under project U22HY0040. A determination was made of "No Historic Properties Affected" for this project. The Utah State Historic Preservation Office concurred with the BLM's finding of effect on 2/8/2022.	Jaymee Hasty	5/11/2022
NP	Cultural: Native American Religious Concerns	Pursuant to the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 131) 13 Native American Tribes were notified of oil and gas development in the area as part of the Greater Deadman Bench EIS by letter mailed 1/8/2004. Several tribes responded in 2004 with no concerns but asked to be updated if projects resulted in new or significant information. There are no identified Native American sites within the project area.	Jaymee Hasty	5/11/2022
NP	Designated Areas:	No areas of critical environmental concern are designated by the Vernal RMP in the project area.	Jessica Farmer	5/23/2022

Determination	Resource/Issue	Rationale for Determination	Signature	Date
	Areas of Critical Environmental Concern			
NP	Designated Areas: Wild and Scenic Rivers	No wild and scenic rivers are designated by the Vernal RMP in the project area	Jessica Farmer	5/23/2022
NP	Designated Areas: Wilderness Study Areas	No wilderness study areas are designated by the Vernal RMP in the project area.	Jessica Farmer	5/23/2022
NP	Environmental Justice	No minority or economically disadvantaged communities or populations are present in or adjacent to the project area, therefore would not be disproportionately adversely affected (physically or economically) by the alternatives.	Daniel Emmett	5/01/2022
NI	Farmlands (prime/unique)	No prime farmlands are in the project area, per NRCS soil survey data.	Daniel Emmett	5/01/2022
NI	Fuels/Fire Management	No fuel management activities are planned for the project area. The proposed action may have an impact to Fire Management due to the increased potential of promoting invasive species; primarily *Bromus tectorum*. *Bromus tectorum* may become established through soil disturbance and may increase fire frequency in those areas, especially with the linear pipeline feature. However, applying the company's Reclamation Plan (Reference 2.2.3 and Appendix C) to this surface disturbing area should help prevent the creation of additional hazardous fuels. It is also recommended that the applicant use fire tolerant plant species in their reclamation efforts. Using fire tolerant plant species in disturbed areas would help prevent additional hazardous fuels along the disturbed areas as well as creating a linear fuel break near roadways and existing wells.	Dixie Sadlier	5/16/2022

Determination	Resource/Issue	Rationale for Determination	Signature	Date
NI	Geology / Minerals / Energy Production	The project area is in fluid mineral leases UTU74972 and UTU73680, both of which are held by the proponent. Any potential impacts to these resource rights could be mitigated by adjusting the siting of future projects as necessary. The Proposed Action would, by design, drain the fluid mineral resources in the area. This resource depletion is specifically allowed by the VFO RMP, as revised. The project area is not within any identified solid mineral resource leases or boundaries. Per review of LR2000 and MLRS data, no active mining claims are in the area. Per review of BLM GIS data, there would be no other impacts to identified geologic or mineral resources.	Garrett Manion	5/16/2022
NI	Lands/Access	The project area is located within Vernal RMP area, which allows oil and gas development with associated road, pipeline, and powerline rights-of-way. Current land uses in and adjacent to the project area include oil and gas development, wildlife habitat, recreation, and sheep and cattle grazing. No existing land uses would be changed or modified by implementation of the proposed action. The proposed action would involve 4 rights-of-way Well Pad UTU-96002, Access Road UTU-96040, Pipeline UTU-96041 and Fresh Water Pipeline UTU-96042. The existing ROW holders in the project area were notified of the project by notice letters mailed on May 24, 2022. No concerns or responses were received.	Cherei Miller	5/23/2022

Determination	Resource/Issue	Rationale for Determination	Signature	Date
		Master Title Plats have been reviewed for this project. No Public Water Reserves or conflicts with them were identified in the project area. Access to the project area would be via Uintah County class D roads. If any upgrades to these roads were anticipated, the Uintah County Commission would be contacted about the upgrades. If the roads would be widened, a road right-of-way would be required.		
NP	Lands with Wilderness Characteristics	No lands with wilderness characteristics are present in the project area, per GIS data and the Vernal RMP.	Jessica Farmer	5/23/2022
NI	Livestock Grazing & Rangeland Health Standards	This project area is in the active Split Mountain grazing allotment which is shared by multiple permittees. This allotment is grazed by cattle and sheep from October 1st to May 15th. The Proposed Action would not be expected to affect Rangeland Health Standards in this allotment due to its limited size of roughly 11 acres, relative to total size of the allotment. The project calls for reclamation following completion. With reclamation, any AUMs lost will be given back.	Travis Decker	5/31/2022
NI	Paleontology	Per Paleontological survey report 2022-174 prepared in February, 2022 by Outlaw Engineering Inc., no significant fossil material was observed in the project area. If any significant fossil material is found, work shall be halted within 50 feet of the discovery and the BLM Authorized Officer contacted for any mitigation measures to be taken. No negative impacts to this resource would be expected.	Garrett Manion	6/2/2022

Determination	Resource/Issue	Rationale for Determination	Signature	Date
PI	Plants: BLM Sensitive	The project area is in the potential habitat polygon for horseshoe milkvetch (*Astragalus equisolensis*) per BLM GIS review. A botanical report prepared by Outlaw Engineering Inc. in February 2022, documented 4.56 acres of suitable habitat for horseshoe milkvetch in the project area. However, no horseshoe milkvetch individuals were observed during the botanical survey within the project area.	Sandra Robins	9/29/2022
NI	Plants: Invasive and Noxious Weeds	A survey completed by Outlaw Engineering Inc. in February 2022, determined that no noxious weeds are present in or near the project area. However, invasive species including African mustard (*Malcomia Africana*), saltlover (*Halogeton glomeratus*), prickly Russian thistle (*Salsola tragus*), and cheatgrass (*Bromus tectorum*) were identified in the project area during this survey. The Proposed Action could contribute to establishment and spread of noxious and invasive plant species. However, the operator would implement a weed control plan as a design feature in accordance with the Green River District Reclamation Guidelines to address any infestation of noxious or invasive plants that would be introduced or spread in the project area. Therefore, invasive plants and noxious weed were eliminated from further analysis in this EA.	Sandra Robins	9/29/2022
PI	Plants: Native Communities	Per GIS review of Landfire data, there are four existing native vegetation types that likely occur in the project area: Inter-Mountain Basins Mixed Salt Desert Scrub, Colorado Plateau Mixed Low Sagebrush Shrubland, Inter-Mountain Basins Big Sagebrush Shrubland, and Grayia spinosa Shrubland Alliance. The	Sandra Robins	9/29/2022

Determination	Resource/Issue	Rationale for Determination	Signature	Date
		anthropogenically modified disturbed plant community type Introduced Upland Vegetation - Annual Grassland is also present. This resource issue is analyzed in detail.		
NI	Plants: Threatened, Endangered, Proposed, and Candidate	There are no threatened, endangered, proposed or candidate plant species presentin or near the project area, based on review of U.S. Fish and Wildlife Information, Planning, and Conservation System (IPAC) database, and an Outlaw Engineering Inc. survey report 2022.	Sandra Robins	9/29/2022
NI	Recreation	er GIS review, there are no developed or undeveloped recreation resources in the project area. Impacts to dispersed recreation would be minor to imperceptible due to similar Pdispersed recreation opportunities available in adjacent areas.	Jessica Farmer	5/23/2022
NI	Socio-Economics	No impact to the social or economic status of the county or nearby communities would occur from this project due to its limited size in relation to ongoing development throughout the Basin.	Daniel Emmett	5/01/2022
NI	Soils: Physical / Biological	Soils: 10.91 acres of soil disturbance would occur during construction until reclamation is successful. Soils would be recontoured and reseeded during reclamation. The locations would be reclaimed and monitored in accordance with the Finley Surface Use Plan on file with the Vernal Field Office of the BLM. Locations would be seeded with the seed mix approved by the BLM Authorized Officer. These design features would reduce soil impacts to a level where detailed analysis would not be required.	Daniel Emmett	5/01/2022
NI	Visual Resources	The project area is classified as VRM Class IV.	Jessica Farmer	5/23/2022

Determination	Resource/Issue	Rationale for Determination	Signature	Date
		The objective of this class is to provide for management activities that require major modifications to the existing landscape. The level of change to the landscape can be high. The management activities may dominate the view and may be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of the basic visual elements of form, line, color, and texture. Because of the management objectives provided in the Vernal RMP for class IV visual resource management, adverse impacts to visual resources from implementation of the Proposed Action would not be anticipated. All lighting should be dark sky friendly unless otherwise needed for safety.		
NI	Wastes (hazardous/solid)	Hazardous Waste: No chemicals subject to reporting under SARA Title III in an amount equal to or greater than 10,000 pounds will be used, produced, stored, transported, or disposed of annually in association with the project. Solid Wastes: Trash would be confined in a covered container and hauled to an approved landfill. No burning of waste or oil would occur. Human waste would be contained and be disposed of at an approved sewage treatment facility.	Daniel Emmett	5/01/2022
NI	Water: Groundwater Quality	Area groundwater resources would be protected by project design and engineering including wellbore casing & cementing programs. The Proposed Action's surface disturbance would not impact groundwater resources. Any potential issues with the potential to impact the groundwater resources	Garrett Manion	5/16/2022

Determination	Resource/Issue	Rationale for Determination	Signature	Date
		would be identified by BLM petroleum engineers during routine inspections of the casing program and would be resolved with standard procedures to remedy any issues found.		
NI	Water: Hydrologic Conditions (stormwater)	The Proposed Action would not alter the topography of the area to a degree that detailed analysis would be needed. It is not expected that surface water or stormwater would be created to the level of concern for Clean Water Act Section 402 (storm water) review. In addition, federal law has exempted energy development from stormwater requirements.	Daniel Emmett	5/01/2022
NI	Water: Municipal Watershed / Drinking Water Source Protection	The Proposed Action would take place in surface drinking water source protection zone 4 of Green River City Utah's, drinking water source protection plan. However, the project does not fall under one of the 4 greatest threats to drinking water quality identified in the plan (1: animal feeding, 2: fertilizer and pesticide runoff, 3: septic systems, 4: paved areas in zone 1), and by following construction BMP's outlined in the plan of development impacts to this resource would not be expected to a level meriting detailed analysis.	Daniel Emmett	5/01/2022
NP	Water: Steams, Riparian, Wetlands, Floodplains	No riparian areas or wetlands are within the project area. The project does cross several intermittent streams adherence to the best management practices outlined in the proposed plan of development, the proposed action is not expected to impact this resource, to a degree that detailed analysis would be required.	Jerrad Goodell	10/7/2022
NI	Water: Surface Water Quality	Due to the limited surface disturbance and adherence to the best management practices outlined in the proposed plan of development, the proposed action is	Daniel Emmett	5/01/2022

Determination	Resource/Issue	Rationale for Determination	Signature	Date
		not expected to impact surface water quality, to a degree that detailed analysis would be required.		
NP	Water: Water Rights	No existing Water Right claims or applications are present in the project area, per BLM GIS data and records review and onsite review.	Daniel Emmett	5/01/2022
NI	Water: Waters of the U.S.	Waters of the U.S. are not present in the project area per USGS topographic map and GIS data review. The proposed action would not impact any drainage where a high water mark can be distinguished, drainages which regularly run water, or wetlands/riparian areas, per onsite.	Daniel Emmett	5/01/2022
NP	Wild Horses	No herd areas or herd management areas are present in the project area, per BLM GIS database.	Daniel Emmett	5/01/2022
PI	Wildlife: Migratory Birds (including raptors)	**Migratory birds:** Numerous migratory bird species may migrate through or nest within the project area. The project actions should be planned to occur outside the nesting season (April 1 - July 15) to mitigate for any impending impacts or disturbance during the nesting season. The project area can be monitored and surveyed by a BLM or other approved biologist for nesting birds so that proposed actions can be implemented earlier than the July 15 timing restriction with approval of the Authorized Officer. **Raptors:** Raptor habitat exists in the project area. Per GIS review, the proposed project lies outside the species-specific spatial buffers of any known raptor nests. Therefore, raptors other than burrowing owl will not be carried forward for detailed analysis. If any raptor nests are found, a BLM biologist should be contacted immediately. Mitigation measures may be required, and seasonal and	Cal DeBerard	5/17/2022

Determination	Resource/Issue	Rationale for Determination	Signature	Date
		spatial buffers would apply to the project during construction, specific to each raptor species. **Burrowing Owl:** Potential nesting habitat occurs within 0.25 mile of the project area per GIS review and personal observation during an on-site visit on April 21, 2022. Mitigation measures may be required, and seasonal and spatial buffers would apply to the project during construction. The burrowing owl is a Utah State and BLM species of concern.		
NI	Wildlife: Fish (designated or non-designated)	**Designated:** It is estimated that 35 acre-feet of water would be needed for the proposed project. The Vernal Field Office has a programmatic consultation with the USFWS that states small water depletions (100 acre-feet or less) in the Upper Colorado River Basin for oil and gas development projects is likely to adversely affect the four endangered fish, however the USFWS service believes the recovery program for these species would adequately address the effects of the Proposed Action through the Recovery Implementation Program Recovery Action Plan (RIPRAP). No effects beyond what was previously analyzed in the programmatic agreement are expected, therefore detailed analysis is not required. **All Fish Species:** No fish are within or near the project area. The drainage control, erosion controls and reclamation design features outlined in the APD would limit impacts to fish populations and their habitats lower in the watershed below the level where detailed analysis would be required.	Jerrad Goodell	10/7/2022

Determination	Resource/Issue	Rationale for Determination	Signature	Date
PI	Wildlife: Non-USFWS Designated	**Pronghorn:** Per review of UDWR GIS data, pronghorn year-long crucial habitat is present within the project area. **White-tailed prairie dogs (WTPD):** The proposed project crosses and is within 0.25 mile of one WTPD colony per GIS review of district files and personal observation during an on-site visit on April 21, 2022. The WTPD is a Utah BLM sensitive species. The burrows of WTPD are also known to be used by burrowing owl for nesting.	Cal DeBerard	5/17/2022
NP	Wildlife: Threatened, Endangered, Proposed or Candidate	Per review of BLM district files and GIS data, no threatened, endangered, proposed, or candidate terrestrial wildlife species are in or near the proposed project area.	Cal DeBerard	5/17/2022
NP	Woodlands/Forestry	No woodlands or forests are present in the project area, per review of GIS and onsite review.	Daniel Emmett	5/01/2022

Appendix Table A-2. Final Review

Reviewer Title	Signature	Date	Comments
Environmental Coordinator			
Authorized Officer			

APPENDIX B: LANDFIRE PLANT COMMUNITY DESCRIPTIONS

INTER-MOUNTAIN BASINS BIG SAGEBRUSH SHRUBLAND

This ecological system occurs throughout much of the western U.S., typically in broad basins between mountain ranges, plains and foothills between 1500 and 2300 m (~4900 – 7500 ft) elevation. Soils are typically deep, well-drained and non-saline. These shrublands are

dominated by *Artemisia tridentata* ssp. *tridentata* (basin big sagebrush) and/or *Artemisia tridentata* ssp. *wyomingensis* (Wyoming big sagebrush). Scattered *Juniperus* spp. (juniper), *Sarcobatus vermiculatus* (greasewood), and *Atriplex* spp. (saltbush) may be present in some stands. *Ericameria nauseosa* (rubber rabbitbrush), *Chrysothamnus viscidiflorus* (sticky rabbitbrush), *Purshia tridentata* (antelope bitterbrush), or *Symphoricarpos oreophilus* (mountain snowberry) may codominate disturbed stands (*e.g.*, in burned stands, these may become more predominant). Perennial herbaceous components typically contribute less than 25% vegetative cover. Common graminoid species can include *Achnatherum hymenoides* (Indian ricegrass), *Bouteloua gracilis* (blue grama), *Elymus lanceolatus* (thickspike wheatgrass), *Hesperostipa comata* (needleandthread), *Leymus cinereus* (basin wildrye), *Hilaria jamesii* (James galleta), *Pascopyrum smithii* (western wheatgrass), *Poa secunda* (Sandberg bluegrass), or *Pseudoroegneria spicata* (bluebunch wheatgrass). Some semi-natural communities are included that often originate on abandoned agricultural land or on other disturbed sites. In these locations, *Bromus tectorum* (cheatgrass) or other invasive weeds can be abundant.

INTER-MOUNTAIN BASINS MIXED SALT DESERT SCRUB

This extensive ecological system includes open-canopied shrublands of typically saline basins, alluvial slopes and plains. Substrates are often saline and calcareous, medium- to fine-textured, alkaline soils, but include some coarser-textured soils. The plant community is characterized by a typically open to moderately dense shrubland composed of one or more *Atriplex* species, such as *Atriplex confertifiolia* (shadscale) or *Atriplex canescens* (fourwing saltbush). *Grayia spinosa* (spiny hopsage) tends to occur on coppice dunes that may have a silty component to them. Northern occurrences lack *Atriplex* species and are typically dominated by *Grayia spinosa*, *Krascheninnikovia lanata* (winterfat), and/or *Artemisia tridentata* (big sagebrush). Other shrubs present to codominant may include *Artemisia tridentata ssp. wyomingensis* (Wyoming big sagebrush), *Chrysothamnus viscidiflorus* (sticky rabbitbrush), *Ericameria nauseosa* (rubber rabbitbrush), *Ephedra torreyana* (Torrey jointfir), *Grayia spinosa*, *Picrothamnus desertorum* (budsage), or *Tetradymia* spp (horsebrush). Some places are a mix of *Atriplex confertifolia* and *Artemisia tridentata ssp. wyomingensis*. The herbaceous layer varies from sparse to moderately dense and is dominated by perennial graminoids such as *Achnatherum hymenoides* (Indian ricegrass), *Bouteloua gracilis* (blue grama), *Elymus lanceolatus* (thickspike wheatgrass), *Pascopyrum smithii* (western wheatgrass), *Hilaria jamesii* (James galleta), *Poa secunda* (Sandberg bluegrass), or *Sporobolus airoides* (alkali sacaton). Various forb species are also present.

COLORADO PLATEAU MIXED LOW SAGEBRUSH SHRUBLAND

This ecological system occurs in the Colorado Plateau, Tavaputs Plateau and Uinta Basin in canyons, gravelly draws, hilltops, and dry flats at elevations generally below 1800 m (5,905 ft). Soils are often rocky, shallow, and alkaline. This type extends across northern New Mexico into the southern Great Plains on limestone hills. It includes open shrublands and steppe dominated by *Artemisia nova* (black sagebrush) or *Artemisia bigelovii* (Bigelow

sagebrush) sometimes with *Artemisia tridentata* ssp. *wyomingensis* (Wyoming big sagebrush) codominant. Semi-arid grasses such as *Achnatherum hymenoides* (Indian ricegrass), *Aristida purpurea* (purple threeawn), *Bouteloua gracilis* (blue grama), *Hesperostipa comata* (needleandthread), *Hilaria jamesii* (James galleta), or *Poa fendleriana* (muttongrass) are often present and may form a graminoid layer with over 25% cover.

GRAYIA SPINOSA SHRUBLAND ALLIANCE

Vegetation in this alliance occurs throughout the lower to middle elevations (600-1600 m) of the Great Basin and the eastern Mojave Desert. The vegetation is more drought-tolerant than *Artemisia tridentata*-dominated communities and typically occurs where local climate or salty soils create high moisture stress. This alliance is characterized by a sparse to moderately dense shrub layer of *Grayia spinosa* (spiny hopsage). Shrub associates include *Artemisia nova* (black sagebrush), *Artemisia tridentata* (big sagebrush), *Atriplex confertifolia* (shadscale), *Atriplex canescens* (fourwing saltbush), *Chrysothamnus* spp. (rabbitbrush), *Ephedra torreyana* (Torrey joint-fir), *Ephedra viridis* (green joint-fir), and *Picrothamnus desertorum* (budsage). The herbaceous layer is typically sparse with *Achnatherum hymenoides* (Indian ricegrass), *Elymus elymoides* (bottlebrush squirreltail), *Hilaria jamesii* (James galleta), and *Poa secunda* (Sandberg bluegrass) being common associates. Stands usually occur on mountain slopes or alluvial fans bordering intermountain basins. Soils are highly variable, but are generally coarse-textured and well-drained, and often alkaline.

INTRODUCED UPLAND VEGETATION – ANNUAL GRASSLAND

These areas are dominated by introduced annual and/or biennial forb species such as: *Halogeton glomeratus* (saltlover), *Kochia scoparia* (burning bush), *Salsola tragus* (Russian thistle), and annual grass species such as *Bromus tectorum* (cheatgrass).

INTRODUCTION

This reclamation plan is designed to outline interim and final reclamation procedures to be implemented by Finley Resources, Inc. on all projects to achieve agency reclamation standards and visual resource management objectives. .

As defined in the Bureau of Land Management's *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development* (i.e., the "Gold Book"):

Interim Reclamation: Consists of minimizing the footprint of disturbances by reclaiming all portions of the well site not needed for production operations. It is understood that interim reclamation may need to be repeated several times on the same area prior to final reclamation. The need for interim reclamation may be due to actions which result in disturbance to the reclaimed surface (i.e., ongoing maintenance and operation activities), or should interim reclamation not prove successful or create the desired results.

Final Reclamation: Sets "…the course for eventual ecosystem restoration….", which means returning the land to a condition approximating or equal to that which existed prior to the disturbance. Final reclamation would be completed following final plugging and abandonment actions of the final well location on the well pad site. Final reclamation actions will be completed on the entire well pad, access route (unless directed by land owner or surface managing agency to leave access road in place) and pipeline corridor areas.

HOW TO USE THIS PLAN

This plan incorporates reclamation into project planning, site development, operations and final abandonment actions. The guidance and action steps outlined here will result in successful reclamation and revegetation, save the company time and money in both the short- and long-term, and provide for future productive uses of the land.

Finley Resources, Inc. is responsible for certain aspects of vegetation management within their lease holdings, including noxious and invasive weed control and reclamation and revegetation. While this plan focuses on reclamation and revegetation, it is understood that Finley Resources, Inc. will control

noxious and invasive weed species on the lease holdings from project initiation through final abandonment of the leased area.

Goals and Objectives

The overall goals of reclamation are:

The interim, short-term goal is to immediately stabilize disturbed areas, minimize soil erosion and sedimentation and to provide the necessary conditions to achieve the long- term goal.

The final, long-term goal is to facilitate eventual ecosystem reconstruction by returning the land to a safe, stable and properly functioning condition.

The objectives of this reclamation plan are:

Establish a desired self-perpetuating diverse vegetative cover that will provide wildlife habitat, livestock grazing and/or other land uses comparable to those available prior to disturbance.

Establish slope stability and desired topographic diversity.

Reconstruct and stabilize altered water courses and drainage features.

Ensure the biological, chemical and physical integrity of the topsoil resource during all phases of construction, operation and reclamation.

Re-establish the visual composition and characteristics to blend with the natural surroundings.

Control the occurrence of noxious weeds and undesirable invasive species by utilizing principles of integrated weed management including prevention, mechanical, chemical and biological control methods.

Minimize the surface impacts to other resources and authorized uses in the vicinity of surface disturbing activities.

Restore the landform and natural processes to re-establish and sustain a pre-disturbance productivity of the site.

Be adaptive to changing environmental conditions. Consider applicable agency Conditions of Approval as a baseline to minimize surface impacts and enhance subsequent reclamation actions.

Conduct monitoring that enables the proper assessment of the reclamation actions and can quickly and effectively identify an unwanted deviation from successful trends in reclamation.

PROJECT PLANNING

During project planning phase and prior to any ground disturbing activities, consideration will be given to plan and prescribe reclamation and other work practices to avoid or minimize impacts to the existing physical environment and visual resources from construction and operation actions.

For example, during site specific project planning it may be appropriate to consider environmental elements such as:

Wetland/riparian areas: Avoid disturbance to wetland/riparian areas. If during project planning this action is the only reasonable course of action, consider using a brush hog to clear existing riparian vegetation. The brush hog would be used to avoid disturbing the riparian vegetation's root mass and accommodate rapid re-establishment of woody riparian vegetation (i.e., willows, cottonwoods, etc.).

Sites involving substantial or long-term change in vegetation: Avoid straight-line contrast between disturbed and undisturbed areas. It may be appropriate to extend the area of disturbance to create an uneven margin of disturbance. Use earth-moving equipment to create "fingers" of undisturbed vegetation alternating into the margins of the disturbed area. Such an action reduces the visual impact of straight-line disturbance and vegetation, and can aid in drawing seeds from surrounding undisturbed areas.

Sites involving large surface and/or bedrock: Consider the surrounding area and replace large rocks onto the disturbed area to simulate the surrounding, undisturbed area. Large rocks provide shade/microhabitats and make the site more aesthetically compatible with adjacent undisturbed areas.

Topsoil Management

Proper management of on-site topsoil, from the time it is initially removed until final reclamation is completed, is paramount to facilitate successful recovery of the disturbed sites within the project area.

Initial New Disturbance

The dirt contractor will be instructed to carefully remove the topsoil to the appropriate depth(s). Topsoil will be stored in windrows not exceeding four feet in height and six feet in width along the non-construction side of the project area, on level terrain, or in areas where surface drainage patterns would not result in loss of topsoil. The dirt contractor must be careful to ensure no subsoil materials are placed with or mixed in with the topsoil.

Proper Storage of Topsoil

Essential organic material and microbes are found in the topsoil. The elements are essential to retain soil moisture, enhance seed germination, and sustain plant growth and development over the short- and long-term. Loss of organic material or microbial death can directly limit the success of implemented reseeding actions. The following actions will be taken to ensure the short- and long-term protection and continued viability of the topsoil.

Keep topsoil free of noxious and invasive weed species and seeds. Regularly inspect stored topsoil and treat as needed to control noxious and invasive weed species and kill weeds that may be present.

Do not compact the topsoil.

Seed topsoil piles in an effort to maintain topsoil viability and reduce erosion potential.

RECLAMATION PLAN

General Practices

The following practices will be completed prior to the initiation of any specific reclamation action:

Clearly identify the specific area(s) to be worked and limit all work to be within this area.

If possible, take photos of the area to be disturbed. These photos can aid in reestablishing contours, drainage patterns, etc., during reclamation and can serve as a baseline of existing vegetation for monitoring purposes.

Conduct a pre-work meeting with any contractor and/or subcontractor associated with actions outlined in this plan. The purpose of such a meeting is to ensure all reclamation actions are discussed and understood prior to initiating any such action.

Ensure a company employee or representative is on site during all reclamation actions. Should a question arise as to the specific actions/processes to be undertaken, surface- disturbing actions will cease and the surface-managing agency or the private landowner will be consulted. Surface-disturbing actions will resume only after clarification and/or adjustments to the specific actions are agreed to by all involved parties.

Provide the surface-managing agency and any private landowner with at least 24-hour notice prior to actual initiation of any reclamation action.

Drill pit and reserve pits will be reclaimed in strict adherence to requirements established in Onshore Order #7. In general these requirements include: pits must be free of oil and other liquid prior to filling; pit liner must be removed to the solids level or treated to prevent re-emergence to the surface; pit area will be filled in and mounded slightly to allow for settling and positive drainage. Such actions would be completed within 90 days of completion of drilling activities for each well or at the direction of the surface managing agency.

Site Preparation

These actions will apply to both interim and final reclamation, as appropriate, and may be repeated as often as needed to prepare a suitable site for reclamation and revegetation.

Action Steps	**Interim**	**Final**
After well completion, areas not necessary for well production will be reclaimed.	X	
Re-strip [definition?] all topsoil and vegetation from all portions of the pad site not previously reshaped to blend with the surrounding contours.		X
Ensure that the site to be reclaimed is free of noxious and invasive weed plants prior to completing any reclamation actions. Pre-treat the site as appropriate to control existing noxious and invasive weed plant and to kill any seeds. Follow directions provided on weed control agent containers regarding the length of time needed following chemical treatment to plant or reseed the site.	X	X
Re-contour areas to be reclaimed to create topography similar to that occurring prior to disturbance. Natural channels will be	X	X

Action Steps	Interim	Final
reconstructed and riprap will be used as appropriate to minimize the potential for water and soil erosion.		
Backfill any remaining excavations and/or pits when they are dry and free of waste and grade to conform to the surrounding terrain.		X
Spread stored topsoil to a uniform depth over the entire disturbed area. If insufficient topsoil is available, use topsoil from another stockpile from a similar landform, soil structure and vegetation community.		X
Leave the reclaimed surface rough, uneven, and pock-marked to create an uneven surface. This condition will increase the capture surface water or snowmelt, diminish the formation of erosive gullies or rills, and enhance vegetation growth and development.	X	X
Install water control structures to prevent erosion until the site is successfully stabilized. Water control structures would be specifically designed per the APD or other authorization.	X	X

Revegetation

Following surface preparation, the site will be reseeded as outlined below.

Action Steps	Interim	Final
Apply seed during periods when maximum soil moisture exists or is anticipated, i.e., preferably in the late fall or early winter. Delay seeding long enough in the fall to prevent germination until the following spring. Spring seeding may be optimum time for seeds to be planted, but may create problems with seeding activities due to excessively wet or dry soil conditions.	X	X

Conduct a simple soil "ribbon" test to determine soil moisture. Sufficient soil moisture exists with a short ribbon of moistened topsoil can be created when the soil is rubbed through the thumb and forefinger.	X	X
Seeding may occur if insufficient soil moisture exists, provided that adequate snow cover is anticipated very soon (within 24 hours) after seeding	X	X
After seeding, and if possible, lightly spread straw or branches over the entire seeded area to reduce wind and water erosion, and to add to the organic material and help maintain soil moisture.	X	X

Seed may be applied using one or a combination of methods and equipment. Criteria for determining which method to use include:

Drill seeder: in relatively flat areas (less than 30 percent slopes) and free of boulders.

Hydro seeder: in areas having slopes exceeding 30 percent, or containing boulders, or to minimize damage to the prepared seedbed.

Broadcast seeding: used in limited situations where the area to be reseeded is too small to effectively use a drill seeder or hydro-seeder. If broadcast seeding is appropriate, seed may be applied by pedestrian methods (with a back-mounted seed bag) or a small ATV- mounted seeder). Broadcast seeding will also require that the seed be mechanically covered to minimize predation and foster seed germination utilizing raking by hand or harrow behind an ATV. Care must be taken when covering to insure that an uneven surface is left that will collect water and minimize erosion potential.

FOR BROADCAST SEEDING, DOUBLE THE AMOUNT OF REQUIRED SEED.

Drill Seeding

Drill seeding will be implemented whenever possible as the desirable seeding method. An appropriate drill seeder and operator care will be utilized to insure that the segregation of seed or the plugging of seed tubes does not occur during the seeding process.

Action Steps	**Interim**	**Final**

Before any seed drilling activity, ensure the drill is set for the correct depth and density of stocking for the various seed species.	X	X
In areas where the goal is to simulate a natural appearance, the site will be drilled in multiple, cross, or overlapping patterns. This action will eliminate the "row crop" appearance of the site.	X	X
Use a drill seeder that is of a size and properly equipped to complete the reseeding action. The drill seeds will be equipped with the following: a) light-weight chains attached to the drill tubs to lightly cover the seed after deposition; and b) packer wheels to compact the seeded furrow and lessen the depth of soil overlying the planted seed.	X	X

Hydro-seeding and Hydro-mulching

The hydro-seeder will be used from the adjacent road or right-of-way. In areas too distant to effectively spray from the road/right-of-way, a hose line may be required. *Only as a last resort* will the hydro-seeder drive over a scarified site. Hydro-seeding and/or hydro-mulching is generally applied in layers.

Action Steps	**Interim**	**Final**
First Layer: Overspray the disturbed site with the recommended seed mix in combination with 40 pounds of organic tackifier, and 300 gallons of water per acre. This action allows the seed to have direct contact with the soil. The organic tackifier binds the uppermost 0.25-inch of topsoil in place to minimize erosion, and keeps the mulch and fertilizer in place on steeper slopes.	**X**	**X**
Second Layer: Overspray the first layer with wood fiber mulch (100 pounds/acre) and 300 gallons of water/acre. The mulch provides a visual marker to ensure even coverage and consistent seed	**X**	**X**

distribution. On slopes greater than 50 percent, an additional 40 pounds of organic tackifier will be added.		
Third Layer: Within 24 hours of applying the seed, overspray the area with 1,500-2,000 pounds of additional wood fiber mulch in combination with 200 pounds of 16-16-8 fertilizer/acre, if appropriate. This layer will minimize depredation of seeds by birds and rodents.	**X**	**X**
Do not allow disturbance to occur following hydro-seeding or hydro-mulching. If hydromulch is penetrated (by humans, vehicles, livestock, etc.) erosion can quickly start directly reducing the success of this method. (refer to Section 3.3.5)	**X**	**X**

Seed Mix

All seed will be acquired from a reputable and knowledgeable source. While it is preferred to have seed collected from native plants surrounding the disturbed area to enhance success, it is not required. All acquired seed will be certified weed-free. All seed poundage will be pure-live seed. Keep all seed bag tags as part of the reclamation record as these tags have important information. Certain surface managing agencies will require submission of all seed bag tags as part of their records.

It is highly recommended that annual planning or reseeding and reclamation actions be conducted. The objectives of this reclamation planning are to: a) determine the kinds, amounts and delivery dates of the needed seed; and, b) provide seed suppliers with sufficient time to gather, collect and prepare the amount of seed needed for the year.

The actual seed mix will be determined by the surface managing agency and/or the private landowner or will be outlined within a site-specific reclamation plan. This seed mix will create a diverse vegetative cover while maximizing the benefits to both wildlife and domestic livestock, while ensuring compatibility with the surrounding landscape. Interim seed mixes are typically based on current technology and change from time to time. They typically include species that provide quick soil stabilization and quick vegetative cover. Final reclamation is anticipated 30 years after interim reclamation, and more efficient seed mixes may be developed by that time. The most advantageous methods for success at the time of final reclamation will logically be used.

It must be noted that individual surface use agreements negotiated with individual private landowners may replace these seed mixes with crop seed, such as alfalfa, corn, wheat or sorghum.

Protection of Reseeded Areas

Animals, including birds, rodents, big game and livestock, are drawn to reseeded areas when the site is seeded and following germination. Seeds provide protein, carbohydrates and sugars; and new vegetation provides substantial nutrition and fiber, as well as moisture to foraging animals.

The following actions are recommended talking points with surface managing agencies and/or private landowners to ensure protection of seeded/reseeded areas from animal predation.

Action Steps	**Interim**	**Final**
Follow directions outlined above to minimize predation of seeded areas by foraging birds and rodents (see Sections 3.3.1. and 3.3.2).	X	X
It may be appropriate to install a temporary protective fence around reseeded areas to reduce the possibility of foraging by wildlife and/or livestock. If range-standard livestock fences are deemed appropriate, such fences would be built to current BLM fence standards deemed appropriate for specific wildlife and livestock species, or as directed by the surface managing agencies or private landowner.	X	X
The protective fence could be removed at the end of the second growing year, if there is direct evidence, obtained through monitoring, that the reseeded area is making substantial progress toward meeting the established reclamation objectives.	X	X
If the established reclamation objectives are not being met, the protective fence would remain and be regularly maintained, until	X	X

the reseeded areas achieve the desired density and are mature enough to withstand foraging pressures.		
Install barricades and signs, as needed, to prevent unwanted vehicle traffic while access routes, ROW corridors and well pads are being revegetated.	X	X

Monitoring

The following monitoring strategy will be undertaken to provide quantifiable data needed to assess the success of this plan to quickly identify changes in trends/progress towards realizing the overall objectives of this plan. Monitoring would be established during interim reclamation, monitoring will continue through final reclamation and beyond until reclamation is determined successful or at the direction of the surface managing agency or private landowner.

Action Steps	**Interim**	**Final**
Use the pre-disturbance photos to help reclaim the site, restore drainage patterns, provide a qualitative record of pre-disturbance vegetation composition and production (refer to Section 3.1).	X	X
Establish photo point(s) at permanent/long-term reference locations to provide a general view of the reclaimed areas associated with the well pads and along the access route and pipeline corridors.	X	X
If after 2 years interim reclamation actions are successful, i.e., meeting the objectives or making substantial progress towards meeting the objectives outlined in this plan, reduce monitoring to every other year until final reclamation is completed and also determined successful.	X	X

<u>Criteria to Determine Success</u>

On Federal, State or Tribal lands, the reclamation objective would be a vegetation community that within two years is comprised of desired and/or seeded species, and where the basal vegetative cover is 75 percent of a similar undisturbed adjacent native vegetation community. If after 3 years, basal cover is less than 30 percent, then additional seeding and reclamation efforts may be required. On private surface land, the criteria for determining success would be as set out above or as specified in the individuals SUA.

4.0 CONCLUSIONS

Successful implementation of this reclamation plan will achieve both short- and long-term goals set out above, and re-establish desirable and diverse vegetative cover for wildlife habitat, livestock grazing and other land uses comparable to those available prior to disturbance. Close coordination between agency representatives and company personnel will encourage successful reclamation and minimize expensive duplicate efforts to insure success.

REFERENCES:

Monsen, Stephen B., Richard Stevens, Nancy L. Shaw., comps. 2004. *Restoring western ranges and wildlands* (Gen. Tech. Rep. RMRS-GTR-136, vols. 1 and 2.) Ft. Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 698 pp, plus indices.

United States Department of the Interior and Department of Agriculture (BLM-USFS). 2007. *Surface operating standards and guidelines for oil and gas exploration and development*. BLM/WO/ST-06/021+3071/REV 07. Bureau of Land Management. Denver, CO. 84 pp.

Introduction

This plan was developed to identify noxious weed control practices that would be implemented for the development pre-construction, post-construction and post- reclamation phases of the Finley Resources, Inc. (Finley Resources) Utah project area. This would include all locations, access roads, pads, pipelines and other disturbed areas associated with the currently planned Finley development project area.

Noxious weeds have the potential to invade areas disturbed by construction and may spread along the reclaimed areas of the development. Soil disturbance may also allow weed seed already present to germinate and grow. Several laws, regulations, and policies govern the management of noxious weeds on public, state and private lands. Under the Noxious Weed Act, county, state, and federal agencies are charged with the responsibility to identify and control invasive plant species that are harmful to public health, crops, livestock, land, or other property.

Plan Purpose

The purpose of this plan is to prescribe methods to prevent and control the spread of noxious weeds, to the extent possible, during post-construction and post- reclamation operational phases within the Utah project area. Finley Resources and their contractors would be responsible for carrying out the methods described in this plan.

This plan is applicable to the pad area, access road and pipeline corridors, and extra workspaces disturbed for the construction, drilling and production phases of the project.

Goal and Objectives

The goals of weed control are to implement measures to prevent the spread of noxious weeds during all phases of operation and to implement prescribed treatments to eliminate, to the extent possible, the invasion of noxious weeds from surrounding lands. Monitoring during the

development and post-reclamation phases will ensure that the weed management goals are achieved.

Noxious Weed Inventory

Prior to construction commencement, BLM, County and/or company personnel would identify known existing noxious weed infestations in the immediate area of construction. The results of this identification would trigger post-construction and post-reclamation noxious weed monitoring, and would determine what control is required for the immediate area. Early identification of existing infestations has helped to minimize the spread of noxious weeds during construction and drilling operations in the past. Information available through the County will include species identified within or adjacent to the project area, locations of infestations, and extent of infestations.

Noxious Weed Management

Weeds are spread by a variety of means including vehicles, construction equipment, construction and reclamation materials, livestock, wildlife and recreational activities. Implementation of preventative measures to control the spread of noxious weeds during construction, operation and reclamation is the most cost-effective management approach.

Preventative Measures

The following steps will be implemented as preventative measures:

Prior to construction, Finley Resources and its contractors will be directed in the methods for cleaning equipment, and in the identification of noxious plant species.

Prior to construction, all known noxious weeds in the area to be disturbed will be located so they may be avoided, or managed.

Prior to entering, construction related vehicles and equipment (access, pipeline and well pad construction equipment) will be cleaned manually or by forced air to remove mud, dirt and plant

parts. The purpose of the cleaning is to remove potential weed seed that may be adhered to the equipment and moved to other well sites.

Equipment, materials and vehicles will be stored in designated areas that are determined to be weed-free locations. This should decrease the potential to spread noxious weeds.

Disturbed areas will be reclaimed and promptly seeded. Noxious weed free certification will be required for all straw bales, mulches or additional seed used in the reclamation process.

Any noxious weed program conducted within the project area will be conducted in cooperation with neighboring landowners. On non-federal lands, Finley Resources may be responsible for control of new weed invasions on areas cleared in association with the project, depending on agreements made among private landowners, weed control districts, and other entities. Finley Resources will be responsible for all noxious weed control within the project area.

Treatment Methods

If needed, Finley Resources will implement noxious weed control measures as determined in consultation with the affected agencies. If the use of herbicides is determined to be necessary, the appropriate Pesticide Use Proposal (PUP) would be submitted to the BLM for authorization for the use of chemicals on Federal lands. When the identified noxious weed populations are in their appropriate growth stage for effective herbicide control, appropriate herbicides will be applied to the identified weed infestations to reduce the spread or proliferation of weeds.

Herbicide application on BLM lands will be performed in general accordance with the "Vegetative Treatments Using Herbicides on Federal Lands in 17 Western States Programmatic Environmental Impact Statement'" June 2007. Only those herbicides approved in the above Environmental Impact Statement and the Record of Decision will be used on BLM lands. Herbicide application can be an effective means of reducing the size of, or eradicating, noxious weed populations. Applications will follow a strict adherence to label specifications and will be controlled, as described in Section 5.1, to minimize the impacts on the surrounding, desired vegetation. In areas of dense weed infestation, a broad application may be appropriate, followed by a seeding program. Supplemental seeding will be based on the criteria of the federal permit. The timing of subsequent revegetation efforts will be based on the persistence of the selected herbicide.

Herbicide treatment is designed to kill or weaken weeds, and prevent seed formation if site conditions are acceptable. All herbicide application will be completed by a state-approved and licensed applicator.

Post-construction and post-reclamation treatment methods for areas with continuing weed infestations will be based on species-specific conditions (e.g., slope, time of year) and will be coordinated with the local regulatory offices.

The importance of timing of control methods for each species should be emphasized. When methods are implemented at the wrong time, they may be ineffective or stimulate additional growth or seed production by the noxious weed. Also note that some species are so persistent that a combination of methods potentially in multiple years may be necessary for successful control. A one-time application of a control method is rarely sufficient to control a noxious weed population. Follow-up applications, combined with sustained monitoring, are necessary to control, contain, and in some cases, eradicate populations of noxious weeds.

Education

Finley Resouces will provide information to their employees regarding noxious weed identification, management, and impacts on agriculture, livestock and wildlife. The critical importance of preventing the spread of noxious weeds in areas not infested, and controlling the proliferation of weeds already present will be explained. The importance of adhering to measures to prevent the spread of noxious weeds will be stressed (e.g., utilizing weed free straw bales and quickly identifying new infestations of noxious weeds).

Monitoring

Finley Resources will monitor for noxious weeds after completion of reclamation for a period specified by the agencies. Surveys will be conducted as early in the year as feasible to identify and treat noxious weeds before they produce seed. Areas where field surveys will be conducted every year include:

Invasion or infestation sites on reclaimed land identified during post-project monitoring surveys by local agencies or by Finley Resouces;

Sites adjacent to existing noxious weed infestations; and

Areas previously treated for noxious weeds. Field survey information, including species identified, locations of infestations, and extent of infestations, will be submitted to the local regulatory office involved (e.g. BLM or Weed Control District).

Herbicide Application, Handling, Spills and Cleanup

Herbicide Application and Handling

If needed, herbicide selection will be based on the types of weeds encountered at each well pad location. Prior to herbicide application, Finley Resources or their Contractor will obtain any required permits from the local authorities. The herbicide application will be performed by a licensed contractor in accordance with all applicable laws and regulations.

The EPA herbicide label application instructions will always be strictly followed. In general, application of herbicides will be suspended when any of the following conditions exists:

Wind velocity exceeds six miles per hour for application of liquids or 15 miles per hour for application of granular herbicides;

Snow or ice covers the foliage of noxious weeds;

Precipitation is occurring or is imminent.

Vehicle-mounted sprayers (e.g., handgun, boom, and injector) will be used primarily in open areas that are readily accessible by vehicles. Hand application methods (e.g., backpack spraying) that target individual plants will be used to treat small, scattered weed populations in rough terrain or along the road corridor. Calibration checks of equipment will be conducted at the beginning of spraying and periodically to ensure that proper application rates are being achieved.

Herbicides will be transported daily to the project site with the following provisions:

Only the quantity needed for that day's work will be transported;

Concentrate will be transported only in containers and in a manner that will prevent tipping or spilling, and in a compartment that is isolated from food, clothing and safety equipment; and

Mixing will only be conducted on-site and only at a distance greater than 200 feet from open or flowing water, wetlands, or other sensitive resources.

All herbicide equipment and containers will be inspected daily for leaks.

Herbicide Spills and Cleanup

All reasonable precautions will be taken to avoid spilling herbicides. In the event of an herbicide spill, cleanup requires immediate action that is based on adequate preparation. A spill kit will be carried on contractor vehicles and also maintained in the herbicide storage areas will allow quick and effective response to spills. Items to be included in a spill kit are:

Protective clothing and gloves;

Absorptive clay, "kitty litter" or other commercial absorbent;

Plastic bags and bucket;

Shovel;

Fiber brush and screw-in handle;

Dust pan;

Caution tape; and

Detergent.

Response to an herbicide spill will vary with the size and location of the spill, but general procedures include:

Utilizing protective clothing;

Stopping the leaks;

Containing the spilled material;

Cleaning up and removing the spilled herbicide and contaminated; absorptive material and soil; and

Transport the spilled pesticide and contaminated material to an authorized disposal site.

Worker Safety and Spill Reporting

All herbicide contractors will obtain and have readily available copies of the appropriate EPA Material Safety Data Sheets (MSDS) for the herbicides being used. Herbicide spills will be reported in accordance with all applicable laws and requirements.

Reporting

Prior to development, a report of baseline conditions regarding occurrence, distribution, and abundance of noxious weeds in the proposed areas of development and immediately adjacent areas (within 10 feet of disturbed areas will be prepared. An annual report will be prepared which addresses the following:

Details the current status of noxious weed occurrence, distribution, and abundance;

Summary of annual activities conducted, records of any herbicide application, including type, treatments, frequency and application rates; and

Projected activities for the following year.

Annual reporting for each location will continue through reclamation for that location. A final report will be prepared one year after reclamation is completed.